

NO-A179 810 RDT&E/ACQUISITION MANAGEMENT GUIDE REVISION(U)
DEPARTMENT OF THE NAVY WASHINGTON DC JAN 87
NAVSO-P-2457-REV

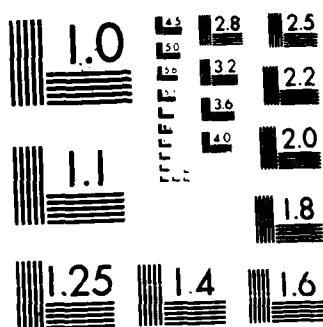
NO-A179 810 RDT&E/ACQUISITION MANAGEMENT GUIDE REVISION(U)
DEPARTMENT OF THE NAVY WASHINGTON DC JAN 87
NAVSO-P-2457-REV

14

UNCLASSIFIED

F/G 5/1

NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

Department of the Navy

NAVSO P-2457

January 1987



AD-A179 810

DTIC FILE COPY

RDT&E / Acquisition Management Guide



10th Edition

DTIC
ELECTE
MAY 7 1987
A



ABBREVIATIONS

ACAT	Acquisition Category	COSATI	Committee on Scientific and Technical Information
ACNO	Assistant Chief of Naval Operations	COTR	Contracting Officer's Technical Representative
ACO	Administrative Contracting Officer	CPAM	CNO Program Analysis Memorandum
ADD	Automatic Document Distribution	CPFF	Cost Plus Fixed Fee
ADL	Authorized Data List	CPFG	CNO Program and Fiscal Guidance
ADM	Advanced Development Model	CPIF	Cost Plus Incentive Fee
ADP	Automatic Data Processing	CPP	Claimant Program Proposal
ADPE	Automatic Data Processing Equipment	CPPG	CNO Policy and Planning Guidance
AFP	Approval for Full Production	CPR	Cost Performance Report
AFSC	Air Force Systems Command	CSCSC	Cost/Schedule Control Systems Criteria
ALP	Approval for Limited Production	CTE	Contractor Technical Evaluation
AMC	Army Materiel Command	DA	Developing Agency
AMRAD	DOD Air Munitions Requirements and Development Committee	DAC	Defense Acquisition Circular
AMSL	Acquisition Management Systems List	DADM	Decision Authority Decision Memorandum
Ao	Operational Availability	DAE	Defense Acquisition Executive
AP	Acquisition Plan	D&F	Determinations and Findings
APBI	Advanced Planning Briefings for Industry	D&V	Demonstration and Validation
APL	Applied Physics Laboratory	DARPA	Defense Advanced Research Projects Agency
ARB	Acquisition Review Board	DARS	Defense Acquisition Regulatory System
ARC	Acquisition Review Committee	DC	Development Coordinator
ASD (-)	Assistant Secretary of Defense for (-----)	DCA	Defense Communications Agency
ASN (M&RA)	Assistant Secretary of the Navy (Manpower and Reserve Affairs)	DCAA	Defense Contract Audit Agency
ASN (R.E&S)	Assistant Secretary of the Navy (Research, Engineering, and Systems)	DCAS	Defense Contract Administration Services
ASN(S&L)	Assistant Secretary of the Navy (Shipbuilding and Logistics)	DCASR	Defense Contract Administration Services Region
ASO	Aviation Supply Office	DCNO (-)	Deputy Chief of Naval Operations for (-----)
AT	Acceptance Trials	DCP	Decision Coordinating Paper
ATD	Advanced Technology Development	DCS	Defense Communications System
ATE	Automatic Test Equipment	DC/S (-)	Deputy Chief of Staff Marine Corps for (-----)
AUTEC	Atlantic Undersea Test and Evaluation Center	DC/S (RD&S)	Deputy Chief of Staff Marine Corps (Research, Development and Studies)
AUTOVON	Automatic Voice Network	DE	Development Estimate
BAM	Baseline Assessment Memoranda	DEP (-)	Deputy (-----)
BT	Builder's Trials	DFARS	DOD FAR Supplement
CAIG	Cost Analysis Improvement Group	DG	Defense Guidance
CAO	Cost Analysis Organizations	DIA	Defense Intelligence Agency
CAS	Contract Administration Services	DID	Data Item Description
CBO	Congressional Budget Office	DLA	Defense Logistics Agency
CCDR	Contractor Cost Data Reporting	DLP	Director of Laboratory Programs
CDPS	Consolidated Decision Package Set	DMSO	Director Major Staff Office
CDR	Critical Design Review	DNA	Defense Nuclear Agency
CE	Current Estimate	DNCPG	DON Consolidated Programming Guidance
CEB	CNO Executive Board	DNFYP	Department of the Navy Five-Year Program
CEIS	Candidate Environmental Impact Statement	DNPP	Director Navy Program Planning
CFF	Contractor-Furnished Equipment	DOD	Department of Defense
CFSR	Contract Funds Status Report	DODISS	DOD Index of Specifications and Standards
CFY	Current Fiscal Year	DON	Department of the Navy
CG (-)	Commanding General (-----)	DONPIC	Department of Navy Program Information Center
C ³ I	Command and Control and Communications and Intelligence	DOP	Development Options Paper
CinC (-)	Commander in Chief, (-----)	DOT&E	Director Operational Test and Evaluation
CIP	Critical Intelligence Parameter	DPA&E	Director Program Analysis and Evaluation
CIR	Cost Information Reports	DP&E	Director, Planning and Evaluation
CJCS	Chairman, Joint Chiefs of Staff	DPSB	DON Program Strategy Board
CMC	Commandant of the Marine Corps	DRB	Defense Resources Board
CNA	Center for Naval Analyses	DRD&A	Director Research, Development, and Acquisition
CNO	Chief of Naval Operations	DROLS	Defense RDT&E On-Line Systems
CNR	Chief of Naval Research	DSARC	Defense Systems Acquisition Review Council
COMOPTVFOR	Commander, Operational Test and Evaluation Force	DSB	Defense Science Board
		DSMC	Defense Systems Management College

①



Application For

Al

This document has been approved
for public release and sale; its
distribution is unlimited.

This document has been approved
for public release and sale; its
distribution is unlimited.

FOREWORD BY MELVYN R. PAISLEY
THE ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING & SYSTEMS)

This tenth edition of the Department of the Navy RDT&E Management Guide appears during the most dynamic period since its original publication in 1964. Clearly, acquisition change now claims the attention of high government officials including the President. My comments herein address not only accomplishments already completed but also planned actions still in process.

The Department of the Navy has been in the vanguard of these efforts. Secretary Lehman believes it is as much his duty to improve the acquisition system as it is to improve weapons hardware directly. Both Congressional leaders and the Packard Commission have cited the DON as an example to be emulated.

The increased emphasis on ensuring maximum contribution to the mission capability of DON operating forces from the resources invested in RDT&E and acquisition is reflected not just in the content of this edition but also in its name. Thus, after more than 20 years, the DON RDT&E Management Guide will now be the DON RDT&E/Acquisition Management Guide or "RDA Guide" for short.

To help readers understand the ongoing changes in the "RDA system", Appendix A provides selected readings. They include excerpts from the Packard Commission Report, my testimony to Congress on DON acquisition policies and practices, Secretary Lehman's instruction on "Acquisition policy," and excerpts from the summary of major provisions of the 1986 Defense Reorganization Act released by the Senate Armed Services Committee after the Senate and House conference committee completed their work.

A central thrust of acquisition change is systematic effort to wring the maximum possible contribution to the mission capability of DON operating forces from RDA investment. Here are some major thrusts of the ongoing evolution in acquisition management and the impact on this 10th edition.

Reduced Layers of Management. The Chief of Naval Material has been abolished. Systems Commanders, in their role as Program Executive Officers (PEO), now are directly responsible to the Secretary of the Navy for acquisition matters. Managers of major programs report through the PEO, a single organization level, to the Secretary of the Navy. (See 1.4.7, "Organization for Acquisition.")

In addition, demand for briefings by the Program Manager associated with major program milestone decisions has been cut drastically. Now, after briefing the SYSCOM Acquisition Review Board, the PM moves directly to SECNAV's Navy Program Decision Meeting prior to presentation to OSD's Joint Requirements and Management Board. On major Marine Corps programs recommendations are made to the CMC by the Marine Corps Program Decision Meeting, prior to the SECNAV Navy Program Decision Meeting and the OSD Joint Requirements and Management Board.

Greater Use of Competition. Prior to 1981, a formal competition was held to select the contractor for full-scale engineering development (FSED). A cost-plus contract was usually awarded and there was little or no competition after that. Now competition in RDA (see 6.3.4) extends throughout the entire acquisition process. At least two sources will be qualified for production through the development process leading to the allocation of limited and rate production between the competing contractors.

Use of Fixed-Price Contracts. Full-scale engineering development will usually start only where the contractors are willing to commit to fixed-price contracts including not-to-exceed price or priced production options.

Increased Contractor Investment. DON suppliers are expected to assume a level of risk and investment in capital equipment comparable to commercial practice.

Control of Changes. To ensure effective implementation of other acquisition reforms, changes in programs must be kept firmly under control. The Program Management Proposal (PMP) process (see 3.3.13) is a major means to that end.

Non-Development Items (NDI) and other Alternatives to R&D. As we strive to maximize the contribution to mission capability from our investment in DON RDA, we must answer the question, on a case-by-case basis, "Is R&D really necessary?" Before approving development, we now require affirmative proof that the need cannot be adequately satisfied through use of NDI -- commercial items; equipment already in the system or available from another military service or foreign military and commercial sources (See Guide paragraphs listed following SECNAVINST 4210.7 in the Master Reference List.)

Cost-Capability Tradeoffs. Secretary Lehman expressed it this way in his instruction on acquisition policy:

"An objective of [cost-capability tradeoff efforts] is to clearly identify and eliminate those capabilities which provide only marginal military worth when compared to cost and/or risk."

Our emphasis on cost-capability tradeoffs will lead inevitably to expanded efforts to gain deeper understanding of military worth, particularly the value of marginal increments of improvement, and to communicate that information, in usable form, to engineers and other participants in weapons acquisition who actually make tradeoffs, at the detail level, in development of a system.

Leadership for Program Management. The Materiel Professional (MP) career program (see 1.6.4) is designed to create a dedicated professional community for management of development and acquisition. Educational and work assignments for MPs provide progression to designated MP flag billets.

Changes on the way. In addition to changes stemming from the internal Department of the Navy quest for excellence, some major changes are required to respond to the Defense Reorganization Act of 1986 which became law 1 October 1986. (See Appendix A section A4.)

In the Office of the Secretary of Defense, the establishment of the Under Secretary of Defense for Acquisition requires a major realignment of functions which is still in process.

The Act made the Secretariats responsible for weapons acquisition with the role of the military staffs limited to military requirements and test and evaluation. This requirement, along with a mandated 15% reduction in headquarters manning levels, will lead to substantial changes in organization for RDA.

Secretary Lehman has held a series of meetings with a few of his top-level advisors to provide direction for major future changes. The most recent of these so-called "Boston Meetings" -- after the little town an hour west of Washington where we met -- was held on 9 December 1986. Here are some proposed actions which will probably be set in motion before the end of February 1987.

o Restructuring of DON Headquarters Organization for RDA. Under the Goldwater-Nichols Reorganization Act of 1986, the entire range of R&D functions will be brought within the direct management of the Navy Secretariat. In the new organization, two new Deputy Assistant Secretaries for Navy and Marine Corps Issues respectively will be responsible for implementation of Navy acquisition policies and the procedures and management of resource allocation. A third DASN for policy issues will include the elements of my current staff and will continue its current function of developing and implementing policy. With the help of the three DASNs, ASN(RE&S) will exercise policy control over R&D requirements, implement the overall Navy/Marine Corps R&D plan, manage the acquisition process through which we conduct R&D, and oversee the transition to production.

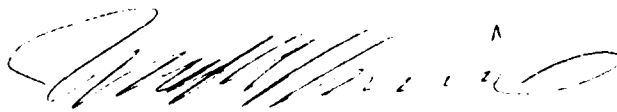
o Merger of OT&E organizations. A proposal has been made to merge functions of COMOPTEVFOR and MCOTEA into one organization with CO and XO billets alternated among the Navy and Marine Corps.

o ACATs and Decision Authorities. It is anticipated there will no longer be an ACAT IIS (SECNAV) and ACAT IIC (CNO/CMC), just ACAT II. All ACAT II programs will be approved no lower than ASN(RE&S)/ASN(S&L). ACAT III programs will be approved by the DASN(RE&S) Navy or Marine Corps Issues. ACAT IV programs will be approved by the appropriate Navy or Marine Corps Program Executive Officer. No change is anticipated for ACAT I programs.

In order to insure the early incorporation of these changes and others that may occur, I plan to republish the Guide within a year.

While much has changed, the Guide's purpose remains as it has always been, to help participants in DON RDA understand the overall system and identify specific directives which provide more detailed information. The Guide reflects directives in effect as of 31 December 1986. The Guide itself is not a directive and cannot be cited as authority for official actions.

Your recommendations for improving this Guide are sought. Please forward them to my office following the directions in the "Editor's Preface" on page ix.



MELVYN R. PAISLEY

DISTRIBUTION LIST

SNDL Part I (1 copy each unless otherwise shown)

21A, 22A, 24, 26F (COMOPTEVFOR (10)—all others (2)), 26G, 29S, 42S.

SNDL Part II (1 copy each unless otherwise shown)

A1 (Immediate office of the Secretary (1) (except ASN (R, E&S) 30));
 A2A (OGC, OLA, NAVCOMPT) (3), CHINFO (3), OPA (4), DONPIC (10), ONR (450);
 A3 (CNO);
 A6 (Headquarters U.S. Marine Corps) (40);
 B1 (OSD) (3);
 B2 (Defense Agencies);
 B2A (DSMC) (620);
 B3 (Colleges (2)—(except ICAF (30)));
 B5 (Coast Guard) (4);
 C1A (Naval Personnel at Army Activities);
 C2 (Naval Personnel at Air Force Activities);
 C3 (Naval Personnel at DOD or other Government Agencies);
 C4P (MARCORCOMMELECSOL);
 C5 (CHMAAG);
 C7 (USDAO);
 C20A (ONRDET);
 C20C (NRLDET); (USRD Orlando) (11);
 C20D (ONRRESREP);
 C49B (Naval Intelligence Operations Group and Unit Detachment);
 E2F (NAVACCTGFINCEN) (4);
 E3A (NAVBIOSCILAB) (2), (NRL) (325);
 E3B (ONRBRO);
 E3C (NORDA) (40);
 E3D11 (NAVENVPREDRSCHFAC) (5);
 FA24 (COMNAVBASE, Charleston, SC);
 FA30 (LANTFLTWPNTAFAC) (5);
 FB6 (NAF El Centro) (5);
 FD1 (COMNAVOCEANCOM) (20);
 FD2 (NAVOCEANO) (3);
 FE1 (COMNAVSECGRU) (2);
 FF1 (COMNAVDIST, Washington, DC);
 FF6 (NAVOBSY) (2);
 FF8 (PRESINSURV);
 FF17 (NAVOBSYFLAGSTAFFSTA);
 FF18 (NAVTACTIONPACT);
 FF36 (DEFREMANEDCEN) (6);
 FF38 (USNA) (12);

FF42 (NAVPGSCOL) (20);
 FF44 (NAVWARCOL) (12);
 FF54 (NAVAVCEN) (2);
 FF62 (CNAVRES);
 FG1 (COMNAVTELCOM) (2);
 FH1 (COMNAVMECOM) (18);
 FH5 (NAVBIODYNLAB) (2), (NAVAEROMED-RSCHLAB) (6), (NAVSUBMEDRSCHLAB) (5);
 FH7 (NAVMECOMSCHINSTITUTE) (18);
 FH8 (NAVMECOMSCHU);
 FH19 (NAVMECOMSCHDEVCOM);
 FH20 (NAVHLTHRSCHCEN);
 FH22 (NAVDENTALRSCHINSTITUTE) (2);
 FH28 (NSHS);
 FKA1A (COMNAVIAIRSYSCOM) (175);
 FKA1B (COMSPAWARSYSCOM) (150);
 FKA1C (COMNAVAFACENGCOM) (10);
 FKA1G (COMNAVSEASYSYSCOM) (150);
 FKA1F (COMNAVSUPSYSCOM) (6);
 FKA8F (DIR SPP) (5);
 FKM12 (NAVPEOFF);
 FKM13 (SPCC) (2);
 FKM15 (ASO BRASO) (5);
 FKM21 (NAVCLOTEXTRSCHFAC) (4);
 FKN1 (FACENGCOMDIV) (6);
 FKN7 (NEESA);
 FKN11 (NAVCIVENGRLAB) (45);
 FKPIB (WPNSTA) (Seal Beach only - Code 3143);
 FKPIE (NAVUSEAWARENGSTA);
 FKPIF (NAVMINEGRFAC);
 FKPIG (NAVSHIPWPNSYSSENGSTA);
 FKPIJ (NAVORDSTA) (5);
 FKP3 (NAVPRO) (6);
 FKP4 (RDT&E Activities);
 FKP4B (NAVEODTECHCEN) (10);
 FKP4C (NAVORDMISTESTSTA) (2);
 FKP6C (SEASPARROWPROJSUPPO);
 FKP6D (NAVXDIVINGU);
 FKP15 (INTCOMBATSYSTESTFAC) (2);
 FKQ2 (NAVELEXSECCEN);
 FKQ3A (NAVELEXCEN) (5);
 FKQ5 (NAVSPASYSACT);
 FKQ6A (NAVAIRDEVCOM) (125);
 FKQ6B (NAVCOASTSYSCEN) (50);
 FKQ6C (NAVOCEANSYSCEN) (220);
 FKQ6D (NAVPERSRANDRCEN) (50);
 FKQ6E (DRNSRDC) (150);
 FKQ6F (NAVSWC) (350);

FKQ6G (NUSC) (200);
 FKQ6H (NAVWPNCEN) (145);
 FKR2A (NAVPRO);
 FKR2B (NAVWPNEINGSUPPACT) (5);
 FKR3A (NAVAIRENGCEN) (50);
 FKR3C (NAVAIRTESTCEN) (50);
 FKR3E (NAVWPNEVALFAC) (8);
 FKR3H (NAVAIRPROPCEN) (19);
 FKR4A (COMPACMISTESTCEN) (145);
 FKR5 (NAVAVIONICCEN) (2);
 FKR7B (NAESU);
 FKR7C (NAVAIRTECHSERVFAC);
 FKR7E (NAVAVNLOGCEN);
 FKR31 (NAVTRASYSCEEN) (25);
 FN3 (NAVSPASUR);
 FR10 (NAVRESCEN, NAVMARCORPSRESCEN);
 FR11 (NAVRESFAC, Anchorage, AK, only);
 FT1 (CNET) (5);
 FT2 (CNATRA) (2);
 FT5 (CNTECHTRA) (2);
 FT23 (FLEBALMISUBTRACEN);
 FT27 (NAVNUPWRTAU);
 FT35 (NAVPHIBSCOL) (2);
 FT37 (NAVSCOLCECOFF);
 FT39 (NAVTECHTRACEN);
 FT43 (SWOSCOLCOM);
 FT44 (NAVDIVESALVTRACEN);
 FT45 (NAVSCOLEOD);
 FT46 (FLEASWTRACEN) (2);
 FT 49 (NAVGMSCOL);
 FT51 (FLEMINWARTRACEN) (2);
 FT53 (NAVNUPWRSOL);
 FT54 (NAVSUBSCOL);
 FT55 (NAVSCSCOL);
 FT72 (DPTNAVSCI);
 FT74 (NROTCU);
 FT76 (COMBATSYSTECHSCOLSCOM);

FT78 (NAVEDTRAPRODEVCEEN);
 FT85 (TRITRAFAC);
 FT88 (EDOSCOL);
 V6 (CG, 4TH MAW);
 V11 (MCI);
 V12 (CG MCDEC) (15);
 V13 (FLDMEDSERVSCOL);
 V22 (4TH Marine Aircraft Unit).

Copy to: (1 copy unless otherwise shown)

SECDEF(USDA) (8);
 DUSD(C³I) (2);
 ASD (MI&L) (6);
 DPA&E (5);
 ASD(PA) (3);
 ATSD(AE);
 CNO(OP-098R) (300);
 COMSPAWARSYSCOM (SPAWAR 0055) (50);
 NAVSEASYSYSCOM (CHENG-T) (420);
 NAVPGSCOL (Code 54 Lt) (300);
 Senior Member, Board of Inspection and
 Survey, Naval Air Test Center,
 Patuxent River, MD 20670;
 CCPO-CC Career Development Institute,
 Bldg. 150, Naval Station Anacostia, Washington,
 DC 20375-1502 (400);
 DTIC(ML) Defense Technical Information Center,
 Cameron Station, Alexandria, VA 22314;
 Commandant, U.S. Coast Guard Headquarters,
 400 7th St. SW, Washington, DC 20590 (3);
 Library of Congress, Science and Technology Di-
 vision, Referral Services Section, National
 Referral Center, Washington, DC 20540;
 Department of the Navy Library, Naval Historical
 Center, Washington Navy Yard, Washington,
 DC 20374.

OBTAINING ADDITIONAL COPIES

For this edition

Submit request for additional copies of NAVSO P-2457 (Rev. 1/87) on DoD Single Line Item Requisition, DD 1348, to the Commanding Officer, Naval Publications and Forms Center, Philadelphia, Pennsylvania 19120, citing Stock No. 0515-LP-400-3406.

For the next edition

Submit requests to be placed on the distribution list, or for changes in the number of copies through automatic initial distribution, to the Office of the Chief of Naval Research (Attn: OCNR 0111), 800 N. Quincy St., Arlington, VA 22217-5000.

CONTENTS

FOREWORD BY MELVYN R. PAISLEY	i
EDITOR'S PREFACE	ix
Chapter 1 ORGANIZATION FOR RDT&E	1-1
Chapter 2 PLANNING	2-1
Chapter 3 PROGRAMMING FOR RDT&E	3-1
Chapter 4 PREPARATION AND JUSTIFICATION OF THE BUDGET	4-1
Chapter 5 EXECUTION OF THE RDT&E BUDGET	5-1
Chapter 6 MANAGING ACQUISITION OF R&D EFFORT	6-1
Chapter 7 TEST AND EVALUATION	7-1
Appendix A READINGS IN ACQUISITION MANAGEMENT	A-1
Appendix B THE NAVY AND DOD DIRECTIVE SYSTEMS	B-1
Appendix C CLASSIFICATION SYSTEMS	C-1
Appendix D TECHNICAL INFORMATION SERVICES	D-1
Appendix E ORGANIZATIONS	E-1
Appendix F RESEARCH AND DEVELOPMENT LABORATORIES/CENTERS	F-1
Appendix G TEST AND EVALUATION	G-1
Appendix H GLOSSARY	H-1
Appendix I (Unassigned)	I-1
Appendix J NAVY SYSTEMS ACQUISITION PROCESS OUTLINE	J-1
MASTER REFERENCE LIST	Ref-1
INDEX	Index-1

Note: Abbreviations used in this work are interpreted on the inner front and rear covers.

LIST OF FIGURES

1-1	Department of the Navy Headquarters Organization for RDT&E	1-5
2-1	Functional View of the Defense RDT&E Process	2-6
2-2	Defense Major System Acquisition Process	2-14
2-3	Typical Program Structure	2-15
2-4	System Acquisition in the Department of the Navy	2-15
3-1	One-Year Versus Two-Year POM Cycle	3-5
C-1	Research Program/Budget Structure	C-3
C-2	Exploratory Development Program/Budget Structure	C-6
C-3	Example of Program Element Numbering	C-9
E-1	Office of the Secretary of Defense	E-3
E-2	Office of the Secretary of the Navy	E-7
E-3	Office of the Chief of Naval Operations (OPNAV)	E-9
E-4	Office of the Director, Research, Development, and Acquisition (OP-098)	E-13
E-5	Naval Air Systems Command Headquarters	E-16
E-6	Naval Sea Systems Command Headquarters	E-17
E-7	Space and Naval Warfare Systems Command Headquarters	E-19
E-8	Office of the Chief of Naval Research (OCNR)	E-24

FLOW CHARTS

FYDP Update Process, series of 9 flow charts and facing-page step statements beginning on page	3-6
Systems Acquisition Process, series of 6 flow charts and facing-page step statements beginning on page	J-2

EDITOR'S PREFACE

The Department of the Navy RDT&E/Acquisition Management Guide was developed to aid both newcomers to RDA management and practicing "journeymen." For newcomers, the Guide provides a means of rapid orientation in the Department of the Navy system for managing its RDA effort. For practicing RDA managers, the Guide is a quick source of general information and identifies directives containing detailed information.

This book is a guide, not a directive. It cannot be cited as authority for action. It supplements directives by helping the user perceive the overall system defined by the totality of *all* directives and identify those applicable to a particular problem. Consult the latest edition of referenced directives for current official guidance.

Directives on which the text is based are listed following the portions to which they apply. Directives applicable to an entire section, such as 1.6, "Program Management," are listed following the section introduction. The half dozen or so most important directives on each chapter subject are listed at the end of the chapter.

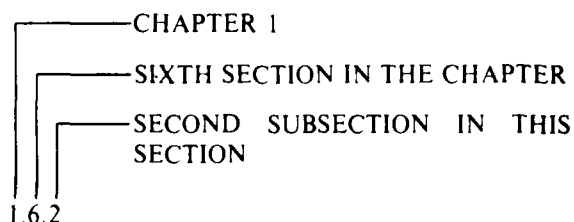
Content and Organization of the Guide

The Guide consists of seven chapters and nine appendixes. Chapters cover organization for RDA and the planning, programming, budgeting, performance, and test and evaluation of RDA effort. The appendixes are a collection of official information brought together for reference.

The Master Reference List, which is bound after the appendixes, shows the edition, promulgation date, and subject for all referenced directives.

To aid the reader in locating desired information, both a comprehensive index and detailed tables of contents preceding each chapter and appendix are provided.

Index citations are by location numbers rather than by page numbers. For example, an index listing of "Charters for designated programs"...1.6.2 indicates that a discussion of the subject may be found as follows:



For ease in locating referenced paragraphs, the last and first paragraph numbers which appear on odd and even pages, respectively, are printed on the top outer corners of those pages. The location numbers of material in an appendix are preceded by the letter of the appendix; e.g., E1.1.2.

The newcomer to RDA management, the reader for whom the Guide is primarily intended, can expect some difficulty with the numerous abbreviations—DCP, DIA, FYDP, etc. Such abbreviations were used not only to save space but also because they are part of the language of RDA management communications. Each time a new abbreviation is introduced, the full expression is given first, followed by the abbreviation in parentheses. Translation of all abbreviations used in this edition, can be found inside the front and back covers.

Revision, Growth, and User Feedback

The RDA Management Guide is designed to be a living document—constantly responding to changes in RDA management structure and processes; constantly improving in content and presentation.

Using commands and individuals are encouraged to submit comments and recommended changes. Less extensive feedback—even mere indications that specific sections are judged to be weak—is useful and solicited. Feedback may be forwarded directly by individuals to:

Deputy Assistant SECNAV (Acquisition)
Attn: RDA Guide Focal Point
Department of the Navy
Washington, DC 20350-1000

CHAPTER 1 ORGANIZATION FOR RDT&E

TABLE OF CONTENTS

1.1 Functions of the Department of Defense	1-1
1.2 RDT&E Responsibilities at the Department of Defense Level	1-2
1.2.1 Secretary of Defense	1-2
1.2.2 Under Secretary of Defense, Policy (USDP)	1-2
1.2.3 Under Secretary of Defense, Research and Engineering (USDRE)	1-2
1.2.3.1 Deputy Under Secretary of Defense, R&E (Research and Advanced Technology) (DUSDRE(R&AT))	1-3
1.2.3.2 Deputy Under Secretary of Defense, R&E (Test and Evaluation) (DUSDRE(T&E))	1-3
1.2.4 Defense Acquisition Executive (DAE)	1-3
1.2.5 Director, Program Analysis, and Evaluation (DPA&E)	1-3
1.2.6 Director, Operational Test and Evaluation (DOT&E)	1-3
1.2.7 Assistant Secretary of Defense (Acquisition and Logistics) (ASD(A&L))	1-3
1.3 Joint Chiefs of Staff (JCS)	1-3
1.4 Department of the Navy Acquisition and RDT&E Responsibilities.....	1-4
1.4.1 Secretary of the Navy (SECNAV)	1-4
1.4.2 Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S))	1-4
1.4.3 Assistant Secretary of the Navy (Shipbuilding and Logistics) (ASN(S&L))	1-4
1.4.4 Chief of Naval Research (CNR)	1-6
1.4.5 Chief of Naval Operations (CNO)	1-6
1.4.5.1 Director RD&A (DRD&A) (OP-098)	1-6
1.4.6 Commandant of the Marine Corps (CMC)	1-6
1.4.6.1 Deputy Chief of Staff (Research, Development, and Studies) (DC/S(RD&S))	1-7
1.4.7 Organization for Acquisition	1-7
1.4.7.1 Navy Acquisition Executive (NAE)	1-7
1.4.7.2 Program Executive Officer (PEO)	1-7
1.4.7.3 Program Manager for Major Acquisition Programs	1-7
1.4.7.4 Acquisition Oversight and Reporting	1-7

1.5	Coupling Mechanisms	1-8
1.5.1	RDT&E Program Interrelationships	1-8
1.5.2	Advisory Panels, Committees, and Boards	1-8
1.5.3	Scientific and Technical Information (STI)	1-8
1.6	Program Management	1-8
1.6.1	Why Program Management?	1-8
1.6.2	Establishment of Programs	1-8
1.6.3	Staffing the Program Office	1-9
1.6.4	Matériel Professional (MP) Program	1-9
1.7	Participants in the Acquisition Process	1-9
1.7.1	Appropriation Sponsor	1-9
1.7.2	Resource Sponsor	1-9
1.7.3	Program Sponsor	1-10
1.7.4	Program Manager (PM)	1-10
1.7.5	Program Coordinator (PC)	1-10
1.7.6	Development Coordinator (DC)	1-10
1.7.7	Program Director (PD)	1-10
1.7.8	Ship Acquisition Program Manager (SHAPM)	1-10
1.7.9	Acquisition Manager	1-10
1.7.10	Contracting Officer	1-10
1.7.11	Acquisition Program Sponsor	1-10
1.8	Naval Systems Commands	1-10
1.9	RDT&E Field Activities	1-10

CHAPTER 1 ORGANIZATION FOR RDT&E

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

In this chapter, organization for RDT&E is discussed in a summary fashion from a somewhat special viewpoint. Emphasis here is on the fundamental responsibilities of officials and agencies, and on interrelationships—how they work together in RDT&E matters.

The information in this chapter is but a small part of the total information provided by the *Guide* on the subject of organization for RDT&E. This is actually what the entire *Guide* is all about, since each chapter is devoted, at least in part, to "who does what" in carrying out various functions. In addition, major sections provide information on individual organizations, for example, Appendix E, "Organizations"; F, "Research and Development Laboratories/Centers"; and G, "Test and Evaluation."

1.1 FUNCTIONS OF THE DEPARTMENT OF DEFENSE

A theme which runs through this *Guide* is the idea that RDT&E is not an end in itself but rather a systematic means for providing the tools for attainment of higher purposes. Navy RDT&E is supported to provide improved tools and techniques for optimal mission effectiveness of Navy

and Marine Corps forces, which are in turn the means for supporting the overall mission of the Department of Defense (DOD).

DOD maintains armed forces to perform the following functions:

- Support and defend the Constitution of the United States against all enemies, foreign and domestic
- Provide that each military department shall be separately organized under its own Secretary and shall function under the direction, authority, and control of the Secretary of Defense
- Ensure, by timely and effective military action, the security of the United States, its possessions, and areas vital to its interest
- Uphold and advance the national policies and interests of the United States
- Safeguard the internal security of the United States.

DODDIR 5100.1 (SECNAV 5410.85)

1.2 RDT&E RESPONSIBILITIES AT THE DEPARTMENT OF DEFENSE LEVEL

NOTICE: Pursuant to recommendations of the President's Blue Ribbon Commission on Defense Management (Packard Commission) and Congressional action, organization for acquisition and RDT&E in OSD was in transition as this 10th edition of the Guide went to press.

While the information in section 1.2 is based on official charters in effect at deadline time, much of it is obsolete. The new arrangements involve creation of a new Under Secretary of Defense for Acquisition (USDA) with responsibilities for weapons acquisition DOD wide. Extensive portions of the SECDEF memo which serves as an interim charter for the USDA are in Appendix E, page E-1.

1.2.1 Secretary of Defense. Functions of the Department of Defense and its component agencies are performed under the direction, authority, and control of the Secretary of Defense (SECDEF). The SECDEF serves under the direction of the President, who, as Commander-in-Chief of the Armed Forces, is responsible for final decisions on broad military problems.

The responsibilities and authorities of the Secretary of Defense are spelled out in the National Security Act of 1947 as amended. The Act makes it clear that Congress intends that the Secretary of Defense be in an authoritative position in relation to the affairs of each of the military departments, particularly for RDT&E. These basic policies are reflected in the following quotation from the Act:

In enacting this legislation, it is the intent of Congress to provide a comprehensive program for the future security of the United States; to provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the Government relating to national security; to provide a Department of Defense, including the three military departments of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force under the direction, authority, and control of the Secretary of Defense; to provide that each military department shall be separately organized under its own Secretary and shall function under the direction, authority, and control of the Secretary of Defense to eliminate unnecessary duplica-

tion in the Department of Defense, and particularly in the field of research and engineering by vesting its overall direction and control in the Secretary of Defense

DODDIR 5100.1 (SECNAV 5410.85)

1.2.2 Under Secretary of Defense, Policy (USDP). USDP is a principal member of the Joint Requirements and Management Board (JRMB) (see 2.5.6.2 and E9.2) and the Defense Resources Board (DRB) (see E9.6).

DODINST 5000.2; DODDIR 5111.1

1.2.3 Under Secretary of Defense, Research and Engineering (USDRE). The position of

Under Secretary of Defense for Research and Engineering (USDRE) was abolished and the positions of Under Secretary of Defense (Acquisition) (USD(A)) and Director of Defense Research and Engineering (DDR&E) established. As of the 31 December 1986 information cut-off for this 10th edition, applicable charters had not been promulgated, cancelled, or modified. No information was available on the duties of DDR&E and no DDR&E had been appointed. (See box on page E-1 for preliminary information on the duties of USD(A).)

The USDRE is the Principal Staff

DODDIR 5129.1

1.2.3.1 Deputy Under Secretary of Defense, R&E (Research and Advanced Technology) (DUSDRE(R&AT)). The Deputy Under Secretary of Defense, R&E (Research and Advanced Technology) advises USDRE concerning the DOD's commitments in research, exploratory development, and non-system-oriented advanced development.

1.2.3.2 Deputy Under Secretary of Defense, R&E (Test and Evaluation) (DUSDRE(T&E)). DUSDRE(T&E) is the principal T&E official in OSD for all T&E matters other than Operational Test and Evaluation (OT&E). The DUSDRE(T&E)'s responsibilities include formulation of T&E policy, approval of T&E Master Plans (TEMP), and assessment of T&E results for the JRMB (see E9.2).

DODDIR 5000.3

1.2.4 Defense Acquisition Executive (DAE). Each agency, under the provisions of OMB Circular A-109, is required to establish an "Acquisition Executive" to integrate, unify, and monitor the application of the agency's process of acquisition of major systems. The Under Secretary of Defense (Acquisition) is the DAE and, within this general responsibility, serves as the principal advisor to the Secretary of Defense for the acquisition of defense systems and equipment. (See E1.7.)

DODDIR 5000.1

1.2.5 Director, Program Analysis, and Evaluation (DPA&E). DPA&E (see E1.6) is a principal member of the JRMB.

1.2.6 Director, Operational Test and Evaluation (DOT&E). DOT&E is the Principal Staff Assistant and advisor to SECDEF for (OT&E). The DOT&E prescribes policies and procedures for the conduct of OT&E and carries out other duties which are described in more detail in G2.2

and in the DOT&E's charter. The DOT&E is a principal member of the JRMB.

DODDIR 5141.2

1.2.7 Assistant Secretary of Defense (Acquisition and Logistics) (ASD(A&L)). ASD(A&L) is responsible to SECDEF for management of DOD acquisition, logistics, installations, associated support functions, and other related matters. The ASD(A&L) is a principal member of the JRMB.

DODD 5128.1

1.3 JOINT CHIEFS OF STAFF (JCS)

The Joint Chiefs of Staff have responsibilities toward the RDT&E programs of the Services as follows:

To advise and assist the Secretary of Defense in research and engineering matters by preparing: statements of broad strategic guidance to be used in the preparation of an integrated DOD program; statements of overall military requirements; statements of the relative military importance of development activities to meet the needs of the unified and specified commanders; and recommendations for the assignment of specific new weapons to the armed forces.

DODDIR 5100.1 (SECNAV 5410.85)

1.4 DEPARTMENT OF THE NAVY ACQUISITION AND RDT&E RESPONSIBILITIES

As of the 31 December 1986 information cut-off for this 10th edition, it was anticipated that, in response to the Defense Reorganization Act of 1986, the staffs of ASN(R,E&S) (1.4.2), OP-098 (1.4.5.1), and DC/S(R,D&S) Marine Corps (1.4.6.1) would be integrated. (See A4 Appendix A and the last page of ASN(R,E&S)'s Foreword.)

Organization for acquisition and RDT&E, depicted in Figure 1-1, can be discussed meaningfully only in terms of the fundamental objectives of the Department of the Navy:

- Organize, train, equip, prepare, and maintain the readiness of Navy and Marine forces for the performance of military missions as directed by the President or the Secretary of Defense
- Support Navy and Marine forces, including the support of such forces and the forces of other military departments, as directed by the Secretary of Defense, which are assigned to unified or specified commands. Support, as here used, includes administrative, personnel, material, and fiscal support, as well as technological support through research and development.

SECNAVINSTS 5430.7, 5430.67

1.4.1 Secretary of the Navy (SECNAV). The Secretary of the Navy heads the Department of the Navy under the direction, authority, and control of the Secretary of Defense. SECNAV is responsible for the policies and control of the Department of the Navy, including its organization, administration, operation, and efficiency. SECNAV is the Navy Acquisition Executive (NAE) (see 1.4.7.1).

DODDIR 5100.1 (SECNAV 5410.85)

1.4.2 Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S)). Under SECNAV, ASN(R,E&S) is responsible for all matters related to research, development, engineering, test, and evaluation within the DON; and for oceanography, ocean engineering, and closely related matters. He is not responsible for ship design and construction.

See box following head for Section 1.4 concerning merger of ASN(R,E&S) staff with staffs of OP-098 and DC/S(RD&S).

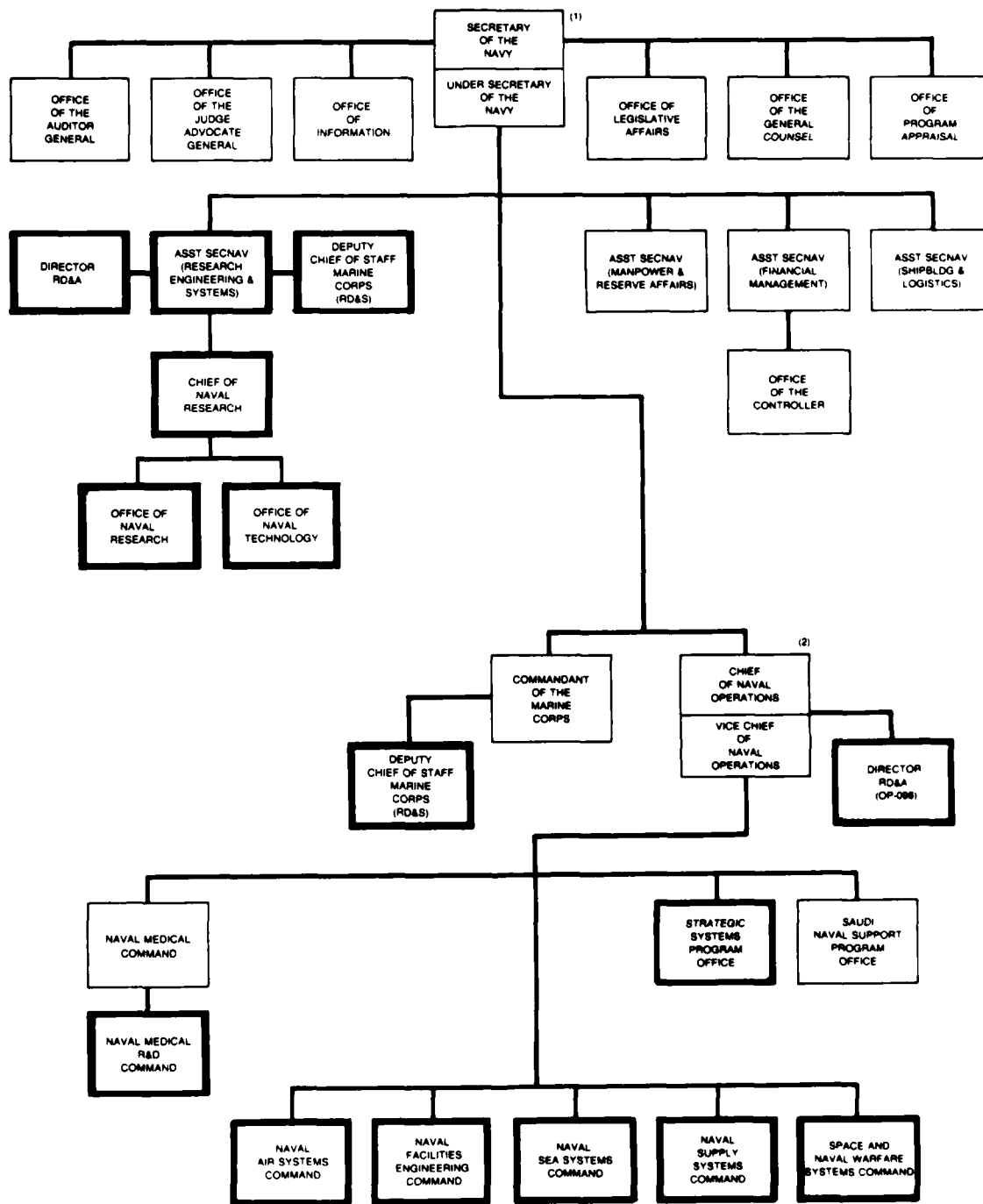
ASN(R,E&S) manages the appropriation "Research, Development, Test, and Evaluation,

Navy" (RDT&E,N). This responsibility gives ASN(R,E&S) far more control over the Navy's programs in his area than that normally exercised by officials at the secretarial level. ASN(R,E&S) is the only civilian executive assistant to the Secretary with control of an appropriation.

Within the Department of the Navy, ASN(R,E&S) functions as a counterpart and principal point of contact for USDRE. ASN(R,E&S) also serves as Chairman of the Research and Development Committee and is responsible for supervision of the Office of Naval Research. Up to the point at which the decision is made to transition to full-scale production, the ASN(R,E&S) assists SECNAV in his role as Naval Acquisition Executive (see 1.4.7.1).

The ASN(R,E&S) has a personal technical staff made up of military and civilian professionals. For technical staff assistance in fulfillment of the department-wide responsibility for policy supervision of all research, development, engineering, test, and evaluation efforts within the Department of the Navy, the ASN(R,E&S) looks to his principal advisors: Director Research, Development, and Acquisition (OP-098); the Deputy Chief of Staff (RD&S), Marine Corps; and the Chief of Naval Research. On matters concerning the Naval Oceanographic Program and those concerning the naval laboratories and Research and Development Centers, the ASN(R,E&S) is advised and assisted, respectively, by the Oceanographer of the Navy (OP-952) and by the Commander, Space and Naval Warfare Systems Command.

1.4.3 Assistant Secretary of the Navy (Shipbuilding and Logistics) (ASN(S&L)). The Assistant Secretary of the Navy (Shipbuilding and Logistics) is responsible for all aspects and stages of ship design for ships in the Five-Year Shipbuilding Program; the physical integration of shipboard components, subsystems, and combat systems; and life-cycle support. The ASN(S&L) is responsible for the management and support of programs following the full-scale production decision, which is made or recommended jointly by ASN(R,E&S) and ASN(S&L). For ships and for all acquisitions following the full-scale production decision the ASN(S&L) assists SECNAV in his role as Naval Acquisition Executive (see 1.4.7.1).



NOTES

(1) Navy Acquisition Executive

(2) Also responsive to the CMC for Marine Corps needs

**Figure 1-1. Department of the Navy Headquarters Organization for RDT&E
(Principal RDT&E elements highlighted)**

1.4.4

In addition the ASN(S&L) is responsible for business strategy and contractual policy, and for logistics and life-cycle support of all acquisition programs.

1.4.4 Chief of Naval Research (CNR). The CNR heads the Office of the Chief of Naval Research (OCNR).

The CNR is responsible for the DON Research (6.1) and Exploratory Development (6.2) Programs. The CNR is responsible to SECNAV through ASN(R,E&S) and is a principal advisor to ASN(R,E&S). The CNR reports to the SECNAV for policy and guidance in the conduct of the DON basic research programs and exploratory development programs. In addition, the CNR is responsible to the SECNAV for planning and executing the DON basic research programs as well as the functions in 10 U.S.C. §§ 5150-51 as prescribed in SECNAVINST 5430.20. CNR serves as an advisor to the CNO and the CMC, and is responsible to the CNO for the effective planning and direction of the Exploratory Development Program.

The OCNR consists of two lead offices: the Office of Naval Research (ONR) and the Office of Naval Technology (ONT). (See E7 for information on organization of the OCNR.)

SECNAVINSTS 5430.20, 5430.67; OCNRINSTS 3910.3, 5430.1, Organization Manual

1.4.5 Chief of Naval Operations (CNO). The CNO is responsible for supervision and command of all functions and activities of the Operating Forces of the Navy and assigned shore activities including the Systems Commands and other naval material activities.

In the overall division of labor which characterizes development of future operational capabilities, the CNO is primarily concerned with what capabilities are of most value, while the Systems Commands, and other RDT&E producers attack the problem of how to achieve these capabilities. In meeting this general responsibility, the Office of the Chief of Naval Operations carries out these functions:

- Define requirements essential to current and future mission capabilities of operating forces
- Appraise the military worth of capabilities which advancing science and technology make potentially attainable through RDT&E effort
- Appraise RDT&E development efforts from the standpoint of potential military worth in relation to costs and approve those projects which promise the greatest return from the resources invested.

OPNAVINST 5430.48

1.4.5.1 Director RD&A (DRD&A) (OP-098). The CNO's Director Research, Development, and Acquisition implements the CNO's responsibilities for the planning, programming, and appraising of RDT&E. DRD&A's role in the various RDT&E management processes is discussed in each of the following chapters of the Guide. He also assists the ASN(R,E&S) (see 1.4.2).

See box following head for Section 1.4 concerning merger of OP-098 staff with staffs of DC/5(RD&S) and ASN(R,E&S).

1.4.6 Commandant of the Marine Corps (CMC). The CMC supervises and commands the United States Marine Corps. The general duties of the CMC include the following specific ones related to RDT&E:

- Plan for and determine the support needs of the Marine Corps for equipment, weapons or weapons systems, materials, supplies facilities, maintenance, and supporting service. This responsibility includes the determination of Marine Corps characteristics of equipment and material to be procured or developed, and the training required to prepare Marine Corps personnel for combat
- Develop, in coordination with other military services, the doctrines, tactics, and equipment employed by landing forces in amphibious operations

- Plan for and determine development requirements of the Marine Corps. To provide for the development, test, and evaluation of new weapon systems and equipment to ensure their being adequate and responsive to immediate and long-range objectives as well as within available resources. To provide direct staff assistance to the Assistant Secretary of the Navy (Research, Engineering and Systems) in the direction, review, and appraisal of the overall USMC RDT&E Program

1.4.6.1 Deputy Chief of Staff (Research, Development, and Studies) (DC/S(RD&S)). The CMC is assisted in performance of RDT&E responsibilities by the DC/S(RD&S). (DC/S(RD&S) also advises the ASN(R,E&S) on all matters relating to Marine Corps RDT&E.

See box following head for Section 1.4 concerning merger of DC/S(RD&S) staff with staffs of OP-098 and ASN(R,E&S).

SECNAVINST 5430.20

1.4.7 Organization for Acquisition. In his National Security Decision Directive implementing recommendations of the President's Blue Ribbon (Packard) Commission on Defense Management, the President called for organization of acquisition such that "no program manager would have more than one level of supervision between himself and his Service Acquisition Executive."

Under the resulting structure, the Program Manager reports to a Program Executive Officer who reports to the Naval Acquisition Executive (NAE). For programs under the cognizance of the Defense Acquisition Executive (DAE), the NAE reports directly to the DAE/USD(A).

DODR 5000.1; SECNAVINSTS 4210.8, 5000.1

1.4.7.1 Navy Acquisition Executive (NAE). SECNAV is the DON NAE. The NAE is responsible for all issues relating to major programs as well as all other significant Navy acquisition issues of concern to the Under Secretary of Defense for Acquisition who is also the Defense Acquisition Executive (see 1.2.4).

SECNAV is assisted in this function by ASN(S&L) and ASN(R,E&S). ASN(R,E&S) assists on major programs up to transition to full-scale production. ASN(S&L) provides assistance to the NAE beyond that point. However, the Assistant Secretaries provide assistance jointly to SECNAV on the full-scale production decision.

1.4.7.2 Program Executive Officer (PEO). The Commander of NAVAIR, NAVSEA, and SPAWAR, the Strategic Systems Program Office (SSPO), and the Marine Corps Deputy Chiefs of Staff for Installations and Logistics (DC/S(I&L)) and for Research, Development, and Studies (DC/S(RD&S)) have been appointed the PEOs for major acquisition programs which fall under their cognizance.

PEOs have authority and responsibility for all ACAT I programs as well as any other programs specifically designated by SECNAV. PEOs report directly on their programs to the NAE/SECNAV.

1.4.7.3 Program Manager for Major Acquisition Programs. Program Managers for major acquisition programs are responsible directly to their respective PEOs and report only to him on program matters. Thus, no manager of a major acquisition program will have more than one level of supervision between himself and the NAE, and no more than two layers between himself and the DAE.

1.4.7.4 Acquisition Oversight and Reporting. ASN(R,E&S) and ASN(S&L) monitor and evaluate performance of material managers. This responsibility applies to PMs for programs ACAT level III and above and certain additional designated programs and Commanders of Naval Laboratories and Test and Development Centers.

This oversight responsibility includes

- Keeping SECNAV advised of progress of programs
- Submitting concurrent fitness reports for material managers in cases of exceptionally high quality or unsatisfactory performance

SECNAVINST 5000.32

1.5 COUPLING MECHANISMS

The RDT&E process has been characterized as a multi-stage information generation and conversion process with information-flow coupling between the stages. From the standpoint of the productivity of the entire process, effective information links between the stages are as important as good research and engineering within the stages. Various institutional arrangements and organizations have evolved to facilitate the coupling process.

1.5.1 RDT&E Program Interrelationships. The discussion in this chapter of organizations and the responsibilities of individual officials can give an incorrect impression of separate parts acting unilaterally and disjointedly rather than of an integrated RDT&E system. While perfect coordination is unattainable, various elements interact in relatively effective ways in planning, executing, and managing the Navy RDT&E Program.

The *processes* through which RDT&E effort is planned, executed, and managed provide the bonds which integrate the various parts of the system. Review of requirements and planning documents, the budgetary process, establishment of test criteria, etc., precipitate discussions of both broad issues and specific concerns out of which a reasonable, coherent view of common purpose emerges. Thus, in one aspect, the following chapters on planning, programming, budgeting, test, and evaluation discuss the links which join the organizational elements discussed in this chapter into an integrated system.

1.5.2 Advisory Panels, Committees, and Boards. An organizational means of providing essential information flow in a usable form is the face-to-face group. Such groups range from advisory boards, which provide information and expert advice, to committees composed of responsible officials, which make policy as well as provide for a flow of information (see E9).

1.5.3 Scientific and Technical Information (STI) In a sense, the basic output of RDT&E effort is STI. The Navy's ability to (1) provide RDT&E performers and managers with necessary STI inputs, (2) collect and store the STI output and, (3) make that output available where needed

constrain overall RDT&E effectiveness. Many organizations have been established expressly to support the collection, storage, and dissemination of STI. Various information functions, services, and organizations are integrated through the Scientific and Technical Information Program (STIP) (see Appendix D for further information on the STIP and STI services).

DODDIR 3200.12; SECNAVINST 3900.43

1.6 PROGRAM MANAGEMENT

Program management is a central organizational device for integrating the RDT&E effort required to develop systems or to provide for development of interrelated capabilities in a problem area such as Directed Energy Systems or ASW.

DODDIR 5000.1; SECNAVINST 5000.1;

1.6.1 Why Program Management? The central characteristic of program management is organization by output or purpose. Consequently, the Program Manager is highly oriented toward the hardware end-product of the program. In contrast, universities, many laboratories, and some industries are organized around functions, skills, or disciplines.

Both types of organization are essential to effective and economical RDT&E. Functional organization is best for advancing the state of the art, for it brings together the necessary critical mass of skills, equipment, and physical facilities required for effective performance. Organization by purpose is necessary to integrate the output of the functional organization in a way that actually accomplishes the desired purposes. Thus, program management cuts across the functional organizations to form what might be termed a "grid" organization.

1.6.2 Establishment of Programs. Managers of designated programs operate under charters issued by the cognizant Program Executive Officer (see 1.4.7.2).

Program charters, issued as instructions in the 5400 series, prescribe the scope of authority, responsibility, and operating relationships of the Program Manager.

NAVMATINST 5000.21

1.6.3 Staffing the Program Office. The program is staffed with the number of business and technical management personnel required to fulfill the direct responsibilities of the Program Manager (PM).

Effective performance by the Program Manager requires both the authority of rank and the authority of knowledge. As a general rule, the PM will be a Colonel or Navy Captain, or sometimes a civilian of the Senior Executive Service (SES); with flag officers heading the more critical programs. The Deputy Program Manager for major programs will typically be an SES civilian. Personnel considered for assignment as senior members of PM staffs should be those who can be expected to be available for at least three years, with major Program Managers serving four-year tours.

Training and development of PMs and senior staff members is a vital and ongoing function. (See 1.6.4 on military personnel.) The PM and the PM's senior staff members are normally graduates of the program management program of the DOD-sponsored Defense Systems Management College (DSMC) or have equivalent training or experience.

SES personnel assigned to program offices will normally have had broad experience and training. SES policy calls for every SES member to be rotated to an entirely different assignment not less than once every five years.

Key staff subordinates are selected by the Program Manager and must be highly qualified by training or experience to manage one or more important elements of the program.

DODDIR 5000.23; SECNAVINST 12920.1; SECNAVINST 12950.11; OPNAVINST 1211.8

1.6.4 Materiel Professional (MP) Program.

The MP Program was established to sustain superiority in naval system management by improving career development, assignment, and use of personnel involved in systems acquisition, logistics, technology, support, facilities, materiel maintenance, and materiel readiness.

MP officers are drawn from Unrestricted Line, Restricted Line, and Staff Corps. The MP career path provides for formal education, developmental training, and assignment to appropriate position of responsibility. Civilian Materiel Professionals are covered by a separate but parallel program.

Over 100 flag positions have been designated as MP billets. A structure of MP billets below the flag level support career development. Designated MP billets include the SYSCOM Commanders, Director (Research, Development, and Acquisition) (OP-098), DCNO (Logistics) (OP-04), laboratory COs, test directors, program managers, and equivalent positions.

DODD 5000.23; SECNAVINST 1040.1; OPNAVINST 1040.9

1.7 PARTICIPANTS IN THE ACQUISITION PROCESS

The acquisition of a major system requires a coordinated effort. Responsibilities of some of the principals are discussed below.

DON Programming Manual, Appendix NB

1.7.1 Appropriation Sponsor. The Appropriation Sponsor is a Deputy CNO (DCNO) or Director, Major Staff Office (DMSO) charged with supervisory control over an appropriation. The Director RD&A (OP-098) is Appropriation Sponsor for the RDT&E,N appropriation.

1.7.2 Resource Sponsor. A Resource Sponsor is the DCNO or DMSO responsible for an aggregation of programs and resources constituting a defined set of warfare and supporting warfare tasks. In liaison with program and appropriation

sponsors, he prepares and justifies a Navy position on resource allocation within the assigned aggregation to assure an effective and balanced program within fiscal guidance.

1.7.3 Program Sponsor. The Program Sponsor is the DCNO or DMSO responsible for determining program objectives, time-phasing and support requirements, and for appraising progress, readiness, and military worth for a given weapon system function or task.

1.7.4 Program Manager (PM). A Program Manager responsible for executing an approved program. The term is restricted to the manager of a relatively major effort who has been designated PM in a program charter (see 1.6).

1.7.5 Program Coordinator (PC). The Program Coordinator is the OPNAV official responsible to the Program Sponsor for providing direction and funds to the naval materiel activities for the execution of acquisition programs. The Program Coordinator is the working link between the CNO's agent, the Program Sponsor, and the naval materiel activity's agent, the Program Manager.

1.7.6 Development Coordinator (DC). The DC is an official on the staff of the Director RD&A (see 1.4.5.1) assigned cognizance for a development program.

1.7.7 Program Director (PD). A Systems Commander may designate a Program Director (PD) to supervise several Project Managers for projects in a single warfare/mission area.

SECNAVINST 5000.1

1.7.8 Ship Acquisition Program Manager (SHAPM). A SHAPM is a NAVSEA Program Manager who manages the development, design, construction, and conversion of assigned ship types. SHAPM operates under a charter from Commander, Naval Sea Systems Command.

1.7.9 Acquisition Manager. An Acquisition Manager performs the functions of a Program Manager for acquisitions which do not require the degree of visibility and status accorded program management.

1.7.10 Contracting Officer. The Contracting Officer has legal responsibility for all contractual matters related to an acquisition.

1.7.11 Acquisition Program Sponsor. An Acquisition Program Sponsor is the DC/S in HQ Marine Corps who is responsible for determining the objectives and other parameters of an acquisition program and for appraising progress, readiness, and military worth for the program. The Acquisition Program Sponsor is assisted by an Acquisition Sponsor Program Officer, responsible for mission area and goals considerations, and an Acquisition Program Officer, responsible for technical considerations.

MCO P5000.10

1.8 NAVAL SYSTEMS COMMANDS

Most, but not all, of the DON RDT&E program is managed by the Systems Commands (SYSCOMS). These are the:

- Naval Air Systems Command
- Naval Facilities Engineering Command
- Naval Sea Systems Command
- Naval Supply Systems Command
- Space and Naval Warfare Systems Command.

Information on the RDT&E organization of each SYSCOM can be found in E4.

1.9 RDT&E FIELD ACTIVITIES

Navy laboratories and other RDT&E field activities are a vital source of strength for the Department of the Navy RDT&E effort.

The Navy develops and maintains laboratories of acknowledged excellence in those fields of science and technology pertinent to its needs. The laboratories develop and prosecute scientific and technical programs which have as their prime objective the improvement of naval capabilities, equipment, and systems.

For additional information on the Navy's laboratories and other RDT&E field activities, see Appendixes F and G.

SELECTED REFERENCES ON ORGANIZATION FOR RDT&E

DODDIR 5100.1 (SECNAV 5410.85), "Functions of the Department of Defense and its Major Components," provides a basic statement of the responsibilities of various organizations and officials within the Department of Defense.

SECNAVINST 3910.3, "Navy Research and Development Laboratories," sets forth responsibilities for management of Navy laboratories.

SECNAVINST 5430.7, "Assignments of responsibilities to and among the Civilian Executive

Assistants to the Secretary of the Navy," documents the responsibilities of ASN(R,E&S) as well as the other Civilian Executive Assistants to SECNAV.

SECNAVINST 5430.67, "Assignment of responsibilities for research, development, test, and evaluation," defines the RDT&E responsibilities of senior DON officials including CNO, CMC, and CNR.

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The "Master Reference List" shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

CHAPTER 2 PLANNING

TABLE OF CONTENTS

2.1	Navy and Marine Corps Planning System	2-1
2.1.1	Navy and Marine Corps Planning System Concept	2-2
2.1.2	Navy and Marine Corps Planning System IntrarelationshiPs	2-2
2.1.3	Planning System Documents	2-2
2.1.3.1	Marine Corps Long-Range Plan (MLRP)	2-2
2.1.3.2	Marine Corps Mid-Range Objective Plan (MMROP)	2-2
2.1.3.3	Marine Corps Science and Technology Objective (STO-MC), Required Operational Capabilities (ROCs), and Operational Requirements (ORs)	2 2
2.2	Overview of the RDT&E Process	2-3
2.2.1	Output of the RDT&E Process	2-3
2.2.2	Nature of the RDT&E Process	2-3
2.2.3	<i>Threat Information</i>	2-3
2.2.4	Studies and Analyses and Systems Engineering	2-4
2.2.4.1	Studies and analyses	2-4
2.2.4.2	Engineering management	2-4
2.2.4.3	System engineering process	2-4
2.2.5	RDT&E as a Subsystem	2-4
2.2.6	"Invention" and "Innovation"	2-4
2.2.7	Categories of RDT&E	2-5
2.2.7.1	6.1 Research	2-5
2.2.7.2	6.2 Exploratory Development	2-5
2.2.7.3	6.3 Advanced Development	2-5
2.2.7.4	6.4 Engineering Development	2-5
2.2.7.5	6.5 Management and Support	2-5
2.2.7.6	Operational Systems Development	2-5
2.2.8	Functional View of the RDT&E Process	2-7
2.2.9	The User-Supplier Dialog	2-7
2.2.9.1	"Needs" and "requirements"	2-7
2.2.9.2	"Technology push" and "requirements pull"	2-8
2.2.9.3	Technology utilization	2-8
2.2.9.4	Patents as an aid to coupling	2-8
2.2.9.5	Domestic Technology Transfer Program	2-8

2.2.10 Weapons Life Cycle	2-9
2.2.10.1 Advanced Technology Development (ATD)	2-9
2.2.10.2 Concept Exploration Phase	2-9
2.2.10.3 Demonstration and Validation Phase	2-9
2.2.10.4 Full-Scale Development Phase	2-9
2.2.10.5 Production and Deployment Phase	2-10
2.3 Planning for Research	2-10
2.3.1 Research of Opportunity	2-10
2.3.2 Research of Response	2-10
2.3.3 Naval Research Requirements (NRRs)	2-10
2.4 Planning for Development of Technology	2-10
2.4.1 Exploratory Development Program	2-11
2.4.2 The Planning Process	2-11
2.4.2.1 First quarter: accountability/assessment	2-11
2.4.2.2 Second quarter: strategic planning	2-11
2.4.2.3 Third quarter: execution planning	2-11
2.4.2.4 Fourth quarter: block program plan reviews, modification, approval, and funding	2-11
2.4.3 Exploratory Development Planning Documentation	2-12
2.4.3.1 Investment Strategy	2-12
2.4.3.2 Mission Area Strategies (MASs)	2-12
2.4.3.3 Block Program Guidance	2-12
2.4.3.4 Block Program Plans	2-12
2.4.3.5 Other documents	2-12
2.5 Systems Acquisition	2-12
2.5.1 Overview of the Process	2-13
2.5.1.1 Non-development items (NDI)	2-13
2.5.1.2 Acquisition Strategy	2-13
2.5.1.3 Program Structure	2-13
2.5.1.4 Test and Evaluation	2-13
2.5.1.5 Pre-Milestone Program Review Process	2-16
2.5.1.6 Approval for production	2-16
2.5.1.7 Thresholds	2-16
2.5.2 Navy Acquisition Categories (ACAT)	2-16
2.5.2.1 ACAT I	2-16
2.5.2.2 ACAT II	2-16
2.5.2.3 ACAT III	2-16
2.5.2.4 ACAT IV	2-16

2.5.3	Program Initiation	2-16
2.5.3.1	Tentative Operational Requirement (TOR)	2-17
2.5.3.2	Development Options Paper (DOP)	2-17
2.5.3.3	Operational Requirement (OR)	2-17
2.5.3.4	Marine Corps Required Operational Capability (ROC)	2-17
2.5.3.5	Justification for Major System New Start (JMSNS)	2-17
2.5.4	Decision Milestones	2-17
2.5.4.1	Mission need determination (Milestone 0)	2-18
2.5.4.2	Milestone I—Demonstration and Validation (D&V)	2-18
2.5.4.3	Milestone II—Full-Scale Engineering Development (FSED)	2-18
2.5.4.4	Milestone III—Production	2-18
2.5.4.5	Other Decisions	2-18
2.5.5	Program Documents	2-19
2.5.5.1	System Concept Paper (SCP)	2-19
2.5.5.2	Decision Coordinating Paper (DCP)	2-19
2.5.5.3	Integrated Program Summary (IPS)	2-19
2.5.5.4	Navy Decision Coordinating Paper (NDCP)	2-19
2.5.5.5	T&E Master Plan (TEMP)	2-19
2.5.5.6	Flash Report	2-19
2.5.5.7	Nonacquisition Program Definition Document (NAPDD)	2-19
2.5.6	Decision Forums	2-19
2.5.6.1	Defense Resources Board (DRB)	2-19
2.5.6.2	Joint Requirements and Management Board (JRMB)	2-20
2.5.6.3	Navy Program Decision Meeting (NPDM)	2-20
2.5.6.4	Acquisition Review Board (ARB)	2-20
2.5.6.5	Ship Characteristics and Improvement Board (SCIB)	2-20
2.5.6.6	Marine Corps Program Decision Meeting (MCPDM)	2-20
2.5.7	Decision Documents	2-21
2.5.7.1	Secretary of Defense Decision Memorandum (SDDM)	2-21
2.5.7.2	SECNAV Decision Memorandum (SNDM)	2-21
2.5.7.3	Decision Authority Decision Memorandum (DADM)	2-21
2.5.8	Ship Requirements and Specifications	2-21
2.5.9	Documentation of Marine Corps Requirements	2-21
2.6	Planning for Support	2-22
2.6.1	Integrated Logistic Support (ILS) Concept	2-22
2.6.2	New Facilities Incidental to RDT&E Effort	2-22
2.6.3	Personnel	2-22
2.7	Cost Considerations	2-23

2.7.1	Economic Analysis	2-23
2.7.2	Design-to-Cost	2-23
2.7.3	Cost Estimation and Analysis	2-23
2.7.3.1	Cost analysis responsibilities	2-23
2.7.3.2	Costing methodologies	2-23
2.7.3.3	Classes of baseline cost estimates	2-24
2.7.3.4	Standard weapon system costs	2-24
2.7.3.5	Navy Cost Information System (NCIS)	2-24
2.7.3.6	Life Cycle Cost (LCC)	2-24
2.7.4	Incremental Acquisition Strategy	2-24
2.7.5	Cost Measurement and Reporting	2-24

CHAPTER 2 PLANNING

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

This chapter is concerned with the management of progress through innovation; specifically, it develops the role of RDT&E in that process.

It should be emphasized that RDT&E is only part of the innovative process which must be managed as an integrated whole to provide maximum assured progress in naval operating capabilities. RDT&E provides the means for advancing the capabilities required to implement the Department of the Navy's overall strategy for the future. That strategy is worked out in the long-range planning process and documented in the plans which are discussed in the first two sections of the chapter and in section 3.4 of the next chapter.

In the remaining sections of the chapter, the development of plans (for providing the capabilities required to implement the Navy's overall strategy for dealing with the future) is traced from the genesis of plans in the interaction of scientific and technological possibilities with long-range military capability needs, to their definitive expression in plans for systems under development. This analysis is in terms of two major functions: development of the technological base and development of hardware-based operational capabilities.

Unless one understands the main function of planning documents, one might easily conclude that the time spent in documentation is disproportionate to the worth of such documents. But

such a conclusion is erroneous, for the true function of documents—the payoff which justifies the considerable investment in their preparation—lies not so much in possession and use of the resulting documents as in the *process* of their development.

Ideally, preparation of documents should catalyze decisions on crucial issues (such as the nature of the Navy we strive to help bring into being through RDT&E effort), ensure that problems are thought through, and record the results of an interactive decision process involving numerous participants. The resulting plans project future capability needs and provide the assumptions needed for sound RDT&E planning.

2.1 NAVY AND MARINE CORPS PLANNING SYSTEM

The Navy and Marine Corps Planning System provides for the development of Navy and Marine Corps plans and associated programs for direct inputs into joint plans and service consideration thereof. These plans form the basic foundation for further planning and programming throughout the Department of the Navy. The Navy and Marine Corps Planning System is responsive to, and operates within, the functional constraints resulting from its interaction with Joint Strategic Planning System. In addition, it accommodates the constraints imposed by the lead times required for research, development, test and evaluation; the construction time for

2.1.1

ships, aircraft, and facilities; and the provision of trained personnel for weapon systems.

DON Programming Manual, Chapter II, "Planning"

2.1.1 Navy and Marine Corps Planning System Concept. The Navy and Marine Corps Planning System serves three basic purposes:

- First, it provides for the development of Navy concepts, requirements, and objectives and for their convincing presentation to higher authority. The intention is to introduce the Navy's viewpoint into Joint Staff, Department of Defense, and Department of the Navy program planning which annually becomes a part of the Department of the Navy's budget submission to the Secretary of Defense.
- Second, it provides a framework for the translation of guidance received from higher authority, strategic and operational concepts, and technological and intelligence forecasts into research and development, force level, personnel, and support plans and objectives.
- Third, it provides guidance and direction for the application of current operating capabilities.

2.1.2 Navy and Marine Corps Planning System Intrarelations. The various plans and documents of the Navy and Marine Corps Planning System interact in such a way that, taken together, they constitute an integrated "system." The output of some of the plans constitutes a major part of the inputs to others, thus providing overall integration and coherence.

The Navy and Marine Corps Planning System also is designed to be responsive to the Joint Strategic Planning System (JSPS) of the Joint Chiefs of Staff, the Department of Defense Planning, Programming, and Budget System, and the Congressional budget cycle. There is a two-way relationship between the Navy and Marine Corps

Planning System and the JSPS in that the Navy and Marine Corps Planning System provides inputs into the Joint Planning System, and Navy plans implement Joint plans.

2.1.3 Planning System Documents. The following documents, and others in section 3.4 of the next chapter, are of particular interest to R&D.

2.1.3.1 Marine Corps Long-Range Plan (MLRP). The Marine Corps Long-Range Plan describes the operational, organizational, and material concepts that the Marine Corps intends to implement in order to carry out its projected roles and missions. The MLRP covers the period 15 to 30 years in the future. Long-range RDT&E objectives are stated in terms of qualitative and quantitative improvements to be attained. These are provided in sufficient detail to allow a beginning of the RDT&E effort within the structure of the Department of Defense Planning, Programming, and Budgeting System. The MLRP is the source document for the generation of Marine Corps Science and Technology Objectives.

2.1.3.2 Marine Corps Mid-Range Objective Plan (MMROP). The MMROP is created against the background of the MLRP. It translates the long-range plan into more definitive goals that must be accomplished in the period 1 to 15 years in the future to provide for an orderly progression from the present towards the long-range concept of Marine Corps combat forces.

2.1.3.3 Marine Corps Science and Technology Objective (STO-MC), Required Operational Capabilities (ROCs), and Operational Requirements (ORs). STOs state Marine Corps operational capabilities objectives for the period 10 to 20 years in the future, as derived from the Marine Corps Long-Range Study (MLRS) and the MLRP. The STOs provide Marine Corps Guidance for technology base programs which lead to concepts, systems, and equipment for the Marine Corps of the future (see C5.2). The ROC and the OR are concise statements of operational needs which provide the basis, respectively, for Marine Corps acquisition programs and for Navy-funded acquisition programs requiring R&D in support of the Marine Corps (see 2.5.9).

2.2 OVERVIEW OF THE RDT&E PROCESS

In this section, the RDT&E process is examined, both as it relates to the larger process of planning and managing improvement in the Navy's ability to carry out its mission, and in terms of its internal workings.

2.2.1 Output of the RDT&E Process. It is not uncommon for people to equate RDT&E with the development of hardware, a view which is as limited as it is erroneous. The product or output which justifies RDT&E effort is an operational capability. Weapons hardware is but one subsystem of the operational capability system. This point must be reemphasized: The objective of RDT&E is operational capability, not hardware *per se*.

The elements of the total system required to provide an operational capability include:

- Equipment—system hardware plus equipment (trainers, support equipment, etc.) required for its effective utilization and support
- People—trained crews and maintenance personnel plus the support system required for their continuing development and for training of their replacements
- Facilities
- Material—consumables, spares, etc.
- Information—technical maintenance data, operating tactics, maintenance procedures, etc.

2.2.2 Nature of the RDT&E Process. The function of RDT&E in the development of operational capabilities is the production of the information required to achieve such capabilities. Some needed capabilities can be achieved without new information, and hence are not RDT&E problems. RDT&E is a multistage information generation and conversion process characterized by the integration and conversion of information within stages and information flow coupling between stages.

RDT&E has been characterized as a way of progressively reducing uncertainty by buying information. In the earliest stages of the RDT&E process, uncertainty is usually very high as to the probable results of effort and the value of the results. Decisions on what to do, and on what not to do, are made on the basis of expected value—the predicted value of the payoff if successful, multiplied by the probability of success. Judicious decisions must be made on how much to pay for uncertainty-reducing information before making particular RDT&E investment decisions. In the case of major weapon systems, a very substantial investment is usually justified.

Fortunately, costs and uncertainty are inversely related in the RDT&E process. At the research end, uncertainty is usually high but the cost relatively low. At the systems development end of the RDT&E process, cost per project can be extremely high while uncertainty is relatively low.

The RDT&E manager, like all managers, is duty-bound to attempt to put the resources subject to his discretion to their most productive use. The obligation will cause the RDT&E manager to "bet on longshots" where costs are low relative to payoff from success and to invest heavily to reduce uncertainties where large investments are at stake.

2.2.3 Threat Information. Threat is the capability of a potential enemy to limit or negate a mission or to neutralize or reduce a Navy capability. The interface of threat with each weapon system is continuous throughout the life of the system. In each weapon system program it is required that specific planning be included for obtaining and using threat intelligence for the life cycle of the program.

Threat statements are required to be included in program documentation (TOR, OR, JMSNS, SCP, DCP/IPS, NDCP, TEMP) and to be updated at each decision milestone (see 2.5.4). If it is determined that a development is not threat-related, that fact must be demonstrated by the program sponsor in the appropriate requirement documents.

DODINST 5000.2; OPNAVINST 3811.1

2.2.4 Studies and Analyses and Systems Engineering. Putting resources to their most productive use requires a clear understanding of (1) what is needed, (2) possible means of getting the desired results, and (3) information on the advantages and disadvantages of the alternatives. Studies and analyses and systems engineering are organized means for producing such information.

2.2.4.1 Studies and analyses. Studies and analyses are organized means for the critical examination and investigation of a subject leading to conclusions or recommendations that make substantive contributions to planning, programming, and decision making.

Studies and analyses are typically "paper-and-pencil" efforts designed to organize and evaluate data and information already available in order to provide greater understanding of relevant alternative organizations, tactics, doctrines, policies, strategies, procedures, systems, or programs. It is DOD policy that studies and analyses be used as essential tools of management. These are considered to be an integral part of executive or command responsibility.

Studies and analyses may be conducted by in-house organizations, by affiliated organizations such as the Center for Naval Analyses, or by outside organizations under contract or grant.

DODDIR 4205.2; SECNAVINST 4200.31; OPNAVINST 5000.37

2.2.4.2 Engineering management. Engineering management is the management of the engineering and technical effort required to transform a military requirement into an operational system. It includes the system engineering required to define the system performance parameters and preferred system configuration to satisfy the requirements, the planning and control of technical program tasks, integrations of the engineering specialties, and the management of a totally integrated effort of design engineering, special engineering, test engineering, logistics engineering, and production engineering to meet cost, technical performance, and schedule objectives.

2.2.4.3 System engineering process. The system engineering process is a logical sequence of activities and decisions transforming an operational need into a description of system performance parameters and preferred system configuration.

MIL-STD-499A, "Engineering Management"

2.2.5 RDT&E as a Subsystem. It is the function of RDT&E to help provide capabilities needed to carry out most effectively the tasks required by the Navy's mission. The determination of future operational capabilities to be sought is not part of the RDT&E process, but rather of the overall Navy planning process as described in the preceding portions of this chapter. While it is the function of higher level planning to decide *what* capabilities ought to be attained, it is the function of RDT&E to find out what will be possible to attain and *how* to achieve those capabilities and to develop and organize the new knowledge required for their attainment. It is the function of acquisition activities to produce those capabilities. Thus RDT&E constitutes only a subsystem of the overall operational capability development system.

2.2.6 "Invention" and "Innovation." The attainment of new capabilities, which is the only justification of RDT&E effort, requires both invention and innovation. Invention is concerned with the development of new options; innovation with exploiting these options (actually developing and putting into use the capabilities those options make possible). Generally, the innovation process is many times more costly than attaining the inventions on which innovation is based.

In general, effort categorized Research (6.1) or Exploratory Development (6.2) is part of the inventive process, while that categorized Advanced Development (6.3), Engineering Development (6.4), and Operational Systems Development (6.6) is primarily innovative. The whole process of development of Integrated Logistic Support (see 2.6.1), which is so important to the attainment of an operational capability, is part of the innovative process.

2.2.7 Categories of RDT&E. For planning, funding, and review purposes, the Defense RDT&E Program is structured in six categories. In discussion and informal documents these categories are often referred to by the numbers of the categories under the DOD Programming System. The six categories and their numbers follow.

DON Budget Guidance Manual (NAVCOMPT 7102.2)

2.2.7.1 6.1 Research. Includes all effort of scientific study and experimentation directed toward increasing knowledge and understanding in those fields of the physical, engineering, environmental and life sciences related to long-term national security needs. It provides fundamental knowledge required for the solution of military problems. It forms a part of the base for (a) subsequent exploratory and advanced developments in Defense-related technologies, and (b) new and improved military functional capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support.

2.2.7.2 6.2 Exploratory Development. Includes all effort directed toward the solution of specific military problems, short of major development projects. This type of effort may vary from fairly fundamental applied research to quite sophisticated breadboard hardware, study programming and planning efforts. It would thus include studies, investigations, and minor development effort. The dominant characteristic of this category of effort is that it be pointed toward specific military problem areas with a view toward developing and evaluating the feasibility and practicability of proposed solutions and determining their parameters. Program control of the Exploratory Development elements will normally be at the mission/warfare level.

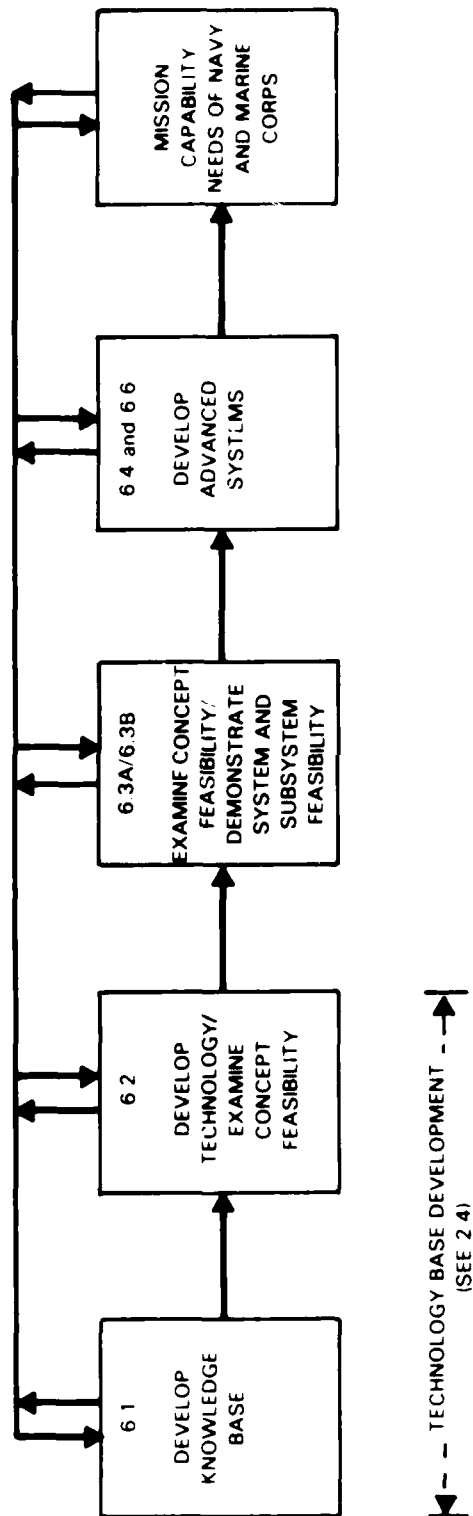
2.2.7.3 6.3 Advanced Development. Includes all efforts directed toward projects which have moved into the development of hardware

for test. The prime result of this type of effort is proof of design concept rather than the development of hardware for service use. Projects in this category have a potential military application.

2.2.7.4 6.4 Engineering Development. Includes those development programs in full-scale development for Service use but which have not received approval for production or had production funds included in the DOD budget submission for the budget or subsequent fiscal year. This area is characterized by major line item projects and program control by review of individual projects.

2.2.7.5 6.5 Management and Support. Includes support of installations or operations required for general research and development use. Included would be test ranges, military construction, maintenance support of laboratories, operations and maintenance of test aircraft and ships, and studies and analyses in support of the R&D program. Costs of laboratory personnel, either in-house or contract-operated, would be assigned to appropriate projects or as a line item in the Research, Exploratory Development, or Advanced Development Program areas, as appropriate. Military construction costs directly related to a major development program will be included in the appropriate element.

2.2.7.6 Operational Systems Development. Includes those projects still in full-scale engineering development but which have received approval for production through JRMB or other action, or production funds have been included in the DOD budget submission for the budget or subsequent fiscal year. All items in this area are major line item projects that appear as RDT&E Costs of Weapon System Elements in other programs. Although Operational Systems Development is an official budget category, 6.6 is a term used for convenience in reference and discussion. Thus, no program element will exist numbered 6.6xxx. All items in this area are major line item projects which appear as RDT&E Costs of Weapons Systems Elements in other programs. Program control will thus be exercised by review of the individual research and development effort in each Weapon System Element.



INFORMATION FLOWS

Figure 2-1. Functional View of the Defense RDT&E Process

2.2.8 Functional View of the RDT&E Process.

Figure 2-1 is a functional view of the Defense RDT&E process in terms of four functions. The term "function" denotes a process or operation through which one or more inputs are converted into a single output. For example, a cement mixer transforms water, sand, dry cement, and gravel into a single output of wet concrete.

In DOD, the functional phases represented by the first two blocks are considered generally to be concerned with the development of the "Technology Base." The Technology Base is that roughly 10 percent of DOD's RDT&E Program devoted to basic and applied research and technology from which most of our options for new systems and better manpower derive. It includes Research, Exploratory Development, and some Advanced Development programs.

Block 1 depicts the development of the store of knowledge by research into how nature works, a knowledge which is essential to the development of a new technology. Predictions concerning technological capabilities that might prove most valuable, accompanied by information on the problems of attaining them, are essential inputs into decisions on what research needs to be accomplished.

Block 2 represents the development of technologies upon which the development of advanced systems will rest. This functional phase includes Exploratory Development.

Block 3 represents some early examination of the feasibility of alternative concepts through the Advanced Technology Demonstration (6.3A) stage and the demonstration and validation phase of Advanced Development (so-called 6.3B) as the initial use of new technologies. It involves experimentally demonstrating the feasibility and cost of combining technologies into technological building blocks. This is the beginning of the innovative process. At this point the basic technology must be in hand. The major product of 6.3 effort is proof of the advantage to be gained through the application of new technology as well as a clearer recognition of the additional new technology that will be required for an advanced system.

Block 4 depicts the function of Engineering Development and Operational Systems Development (6.4/6.6). This function is one of innovation, not of invention. The new technology must have been developed through effective Research and Exploratory Development effort before it can be exploited in systems development.

In paragraph 2.2.2, RDT&E was characterized as a multistage information generation and conversion process with information flow coupling the stages. From the standpoint of the effectiveness of the process, good coupling between the stages is as vital as good research and engineering within the stages.

2.2.9 The User-Supplier Dialog. Efficient coupling requires effective performance of two roles: that of Supplier as spokesman for means, and that of User as spokesman for ends. The User is primarily responsible for determining *what* needs to be done while the Supplier is primarily responsible for determining *how* results can be achieved. Together, through an active dialog in which the User is spokesman for "demand" and the Supplier for "supply," they hammer out the best compromise between what is desirable to have and what is possible to get.

The roles of User and Supplier are relative. One individual or organization may function as User in one relationship and as Supplier in another. For example, the SYSCOM Commanders function as Users in their relationship with the Chief of Naval Research but as Suppliers when dealing with CNO. CNO in turn is the User in his dealings with the SYSCOM Commanders but the Supplier when dealing with the Secretary of Defense.

2.2.9.1 "Needs" and "requirements." A variety of terms is used in communications concerning desired capabilities—i.e., "need," "objective," "target," "problem," "requirement," etc. While all of these terms denote capabilities presumed to be of value in accomplishing the mission, they differ in what they imply about the User's commitment to spend resources for their attainment. The whole User-Supplier dialog is tempered by the obligation of both User and Sup-

plier to apply government resources in the manner which promises to yield the maximum overall benefit in terms of mission capability.

"Need" is used by DOD in a specific sense, as set forth, for major system acquisitions, by OMB in Circular A-109. Under the Circular, when analysis of forecast missions, capabilities, technical opportunities, overall priorities, and resources indicates a deficiency in existing capabilities or an opportunity to establish new capabilities, a "mission need" exists. This mission need is set forth by the Component head or by the agency staff in a "mission need statement." The mission need is submitted to and approved by the agency head as the first, necessary step in the acquisition process, which must be accomplished before resources may be committed or programs established. In DOD, for major programs, this takes the form of a "Justification for Major System New Start (JMSNS)" submitted by a Service Chief with the Service POM. Inclusion of the projection as a funded item constitutes approval by SECDEF for program initiation.

A "requirement" is generally understood to be the documentary means by which the User, CNO/CMC, lays out to the Supplier—normally the technical establishment—a specific mission need for resolution.

In the formal User-Supplier dialog between CNO/CMC and the SYSCOMs, the User issues an Operational Requirement (OR) (see 2.5.3.3) in the case of the Navy and a Required Operational Capability (ROC) (see 2.5.9) in the case of the Marine Corps. This is done to indicate interest in a specific capability. An approved OR/ROC, for less than major programs, permits program initiation, authorizing the commitment of resources. (See discussion of "incremental acquisition strategy" in 2.7.4.)

2.2.9.2 "Technology push" and "requirements pull." The concepts of "technology push" and "requirements pull" are related to the relative influence of "supply" (technology push) and "demand" (requirements pull) on shaping research and development programs. Technology push is a matter of what is technologically feasible and of the eagerness of the R&D community to do what can be done; while requirements pull

is concerned with what is worth doing, with the drive to solve problems barring attainment of needed operational capabilities.

An improved capability to project meaningful information on what is worth doing, and to inject it into the decision process in a way that does more good than harm, is being actively sought. The RDT&E management system is frequently modified, as the R&D community seeks to apply requirements pull to channel effort toward desired ends without losing the drive toward technological opportunity provided by technology push.

2.2.9.3 Technology utilization. The process of coupling involves distinctive subfunctions. One of these subfunctions is learning about potential applications for capabilities emerging from research and development, or conversely, learning of technological means for providing required capabilities. This subfunction is completed when the right User and Supplier have established contact with each other.

Once initial contact has been established, the subfunction of actually transferring knowledge from Supplier to User must be accomplished. It is known that effective transfer of proven technology requires much more than forwarding of documents. One aspect of this problem is the transfer of knowledge from the R&D activity to the production activity.

2.2.9.4 Patents as an aid to coupling. The United States Patent Office has copies of more than three million domestic patents, seven million foreign patents, and countless pieces of trade literature classified in carefully defined technical categories. A search and review of this vast amount of readily available information should be utilized to provide familiarization with any prior approaches to resolve a particular problem, or to identify approaches which may be covered by patents. The knowledge thus gained can result in cost savings by avoiding both the unnecessary expense of duplicating the prior efforts of others and possible patent infringements.

2.2.9.5 Domestic Technology Transfer Program. Technology developed under military

RDT&E programs has historically made great contributions to the ability of U.S. high-technology products, such as computers and jet aircraft, to compete in world markets. The Military-Civilian Technology Transfer and Cooperative Development Program was established to strengthen the synergistic relationship between Navy RDT&E and the civilian economy. The objectives of this program are (1) to facilitate the flow of Navy-developed technology to civilian applications, and (2) to provide for cooperative development of technologies of importance to both the Department of the Navy and the civilian economy.

NAVMATINST 5700.2A (or superseding OCNR-INST)

2.2.10 Weapons Life Cycle. For management purposes the life cycle of systems is divided into four program phases and, in some cases, one pre-initiation phase, with a key decision preceding each stage.

DODDIR 5000.1, DODINST 5000.2; SECNAV-INST 5000.1

2.2.10.1 Advanced Technology Development (ATD). Some programs pass through a pre-initiation ATD phase, designed to facilitate the transfer of technology from the research and exploratory development stages into systems development. Projects selected for this phase are generally directed at the demonstration of technological innovations in a real-world environment. The ATD phase corresponds roughly to the earliest stages of Advanced Development, often referred to informally as 6.3A. The ATD phase provides candidate concepts for further development.

2.2.10.2 Concept Exploration Phase. This is the first phase at which a concept becomes identified with a system *per se*. It begins with the mission need determination decision, by approval of a JMSNS, for major systems, or of a TOR/OR/ROC for less-than-major systems.

During this phase, the technical, military, and economic bases for an acquisition program are established through comprehensive systems studies and experimental hardware development and evaluation. The Concept Exploration Phase is highly iterative. Its stages overlap rather than occur sequentially. However, flowing from interacting inputs of operational needs and technology, the following stages generally occur:

- Identification and definition of conceptual systems
- Analysis (threat, mission, feasibility, risk, cost, trade-offs, etc.)
- Experimentation and test (of operational requirements, key components, critical subsystems, and marginal technology).

The outputs of the Concept Exploration Phase are alternative systems (including a preferred system) and their associated program characteristics (costs, schedules, and operational parameters) based on a combination of analyses, experiments, and test results.

The Concept Exploration Phase includes the conception of new systems (which help provide focus for Exploratory Development planning) and the program execution required to provide the technology necessary to make the concept technically feasible.

2.2.10.3 Demonstration and Validation Phase. This is the phase in which, through extensive analysis and hardware development, the principal program characteristics are validated. It is often identified with Advanced Development and referred to informally as 6.3B. It is preferred to rely on hardware development and evaluation rather than paper studies, since this provides a better definition of program characteristics, higher confidence that risks have been resolved or minimized, and greater confidence in the ultimate outcome. In an idealized case, this phase ends when a "brass board" model has been demonstrated successfully.

2.2.10.4 Full-Scale Development Phase. During this phase, the weapon system (including

all the items necessary for its support, i.e., training equipment, maintenance equipment, handbooks for operation and maintenance, etc.) is designed, fabricated, and tested. The intended output is a hardware system, the performance and reliability of which have been proven experimentally, along with the documentation needed to produce for inventory use. An essential activity of the Full-Scale Development Phase is Test and Evaluation (see Chapter 7, and Appendix G), both that conducted by contractors and that conducted by the Service.

2.2.10.5 Production and Deployment Phase. During this phase the weapon system, including training equipment, spares, etc., is produced for operational use and some operational test and evaluation is conducted. The weapon system is provided to and used by operational units.

2.3 PLANNING FOR RESEARCH

The birth of new technologies and the improvement of existing technology depend upon the knowledge base developed through scientific research. Research tasks evolve in a variety of ways. The following paragraphs discuss some of the ways research tasks evolve.

DODDIR 3210.1 (ONR 3900.30); ONRINST 3910.2

2.3.1 Research of Opportunity. The need for research in a particular area may be brought out by activity within science itself. A new discovery in a field of little previous interest may reveal new possibilities of far-reaching importance to the Navy. Resources have to be made available for such opportunities.

Other research is planned and conducted to meet needs for scientific information in areas clearly relevant to the mission of the Navy.

2.3.2 Research of Response. The need for research may be indicated by events in another part of the Navy program. In the carrying out of a development project, specific problems arise

whose solutions require new knowledge obtainable only through scientific research.

2.3.3 Naval Research Requirements (NRRs). The NRRs constitute the structure for planning research in science so that an adequate scientific knowledge base will be maintained. Although a time lag of 20 years or more may exist between the articulation of research results and their application to new technology, an adequate base of new knowledge is vital to development of the necessary technology base.

A Naval Research Requirement (NRR) states in general terms the need for investigations and studies in the physical, engineering, environmental, and life sciences to provide information related to solving specific practical problems and to expanding the scientific base essential to enhancing existing and future naval technology.

The NRR is basically a Supplier-oriented document. It authorizes research in the identified areas, but does not state in performance-specification terms the results to be achieved by such research. A principal function of the NRRs is to provide a framework for programming research effort (see C3.2).

ONRINST 3910.2

2.4 PLANNING FOR DEVELOPMENT OF TECHNOLOGY

The objective of technical-base planning is to integrate many individual technology developments in joint service programs where appropriate, to develop the technology to counter threats; to provide the Fleet with new warfighting capabilities; and to make systems more affordable. This requires that technical-base program planning produce a program balanced across a spectrum of individual technology developments and investigations. Planning not only addresses individual programs, but is carried out according to an investment strategy that achieves balance, meets the most urgent requirements, prioritizes individual programs, and makes effective use of

available resources. Emphasis in this section is on process and documentation.

OCNRINST 3910.3

2.4.1 Exploratory Development Program.

Exploratory Development (ED) is a DOD budget category and a program that operates under its own rules and chain of command. The process is similar to, but separate from those of Research, Advanced Development, and Engineering Development.

Exploratory Development is that segment of the Navy Research, Development, Test and Evaluation (RDT&E,N) Program that includes all efforts, short of major development programs, directed toward the solution of specific military problems. This effort varies from fairly fundamental applied research to development of quite sophisticated breadboard hardware. The program includes analyses, investigations, notional systems, conceptual studies, assessments, and minor hardware development efforts. The Exploratory Development Program provides the vital transition from the products of research to useful application.

The objective of Exploratory Development is to develop new technology needed for future systems and improvement of existing systems in order to allow the Navy to meet the known and projected threats for the next ten to fifteen years. Most of the true innovations in naval platforms and hardware systems have either originated or been strongly nurtured in Exploratory Development.

2.4.2 The Planning Process. The ED Program PPBS process can be divided into four phases corresponding to the quarters of the fiscal year. The process integrates execution, budgeting, programming, and planning. The following sections describe the process in these terms.

2.4.2.1 First quarter: accountability/assessment. During this quarter ONT reviews and assesses the previous and current years' pro-

gram by means of formal block-program reviews. The information from these assessments is used to develop the 6.2 POM, provide block programming guidance for budget execution in the following fiscal year, guide reprogramming and program change request decisions, and guide strategy development. The assessments also identify program accomplishments and potential new starts.

During this quarter also, the 6.2 submissions for the President's budget are made final, and Research and Development Descriptive Summaries (RDDS) are prepared for Congress. The Maritime Strategy and Warfare Appraisals are reviewed to assess program responsiveness to needs and policy.

2.4.2.2 Second quarter: strategic planning. During this phase, investment and mission area strategies are developed by ONT. The 6.2 POM is completed and the DON POM requirements are satisfied. This period coincides with Congressional hearings and the middle phases of the DON POM process. Thus, during this period, ONT defends the budget for the following fiscal year and expenditures planned for the POM years.

2.4.2.3 Third quarter: execution planning. The block program guidance is developed and issued, and the block programs for the following fiscal year (budget year) are developed. The block plans encompass the execution (current), budget, and POM years. The strategies are reviewed by OPNAV and the SYSCOMs, adjusted to accommodate their recommendations, and promulgated. The POM financial figures are submitted to the Director, RD&A (OP-098).

2.4.2.4 Fourth quarter: block program plan reviews, modification, approval, and funding. During this quarter, block program plans are reviewed, adjusted, and approved. Funding documents are promulgated by 30 September. Approval of the block plans provides a Navy consensus on the next Exploratory Development budget and forms the basis for the Navy submittal for the President's budget. OSD reviews the DON ED Investment and Mission Area Strategies during this period to obtain information for defense of the DOD budget.

2.4.3 Exploratory Development Planning Documentation.

2.4.3.1 Investment Strategy. The ED Investment Strategy balances the available resources across mission areas according to priority of needs, payoff, rate at which the threat is developing, opportunities, and other factors and defines policies that maximize the effectiveness of the program. The investment strategy, briefed annually in January/February, sets the focus and major thrusts of the program. It responds to program guidance provided by ASN(R,E&S) and OP-098 and to requirements provided by the System Commands.

2.4.3.2 Mission Area Strategies (MASs). The MASs establish the DON ED program objectives for each mission area in terms of the operational impact of the planned technology program on the warfighting capabilities of the Navy and Marine Corps. The MASs, promulgated annually in February and March, provide program goals and guidance for the execution-phase planners and performers, set priorities for the technology thrusts, and define the block program objectives supporting the technology thrusts.

2.4.3.3 Block Program Guidance. A block program is an integrated group of technology projects with closely related applications and/or technical objectives assigned to a lead Laboratory/Center or to a SYSCOM program manager. Typically a block program encompasses ED program efforts in a warfare technology area. Block programs are management entities designed to aggregate funding and program efforts to the maximum extent possible, in order to increase management efficiency.

Annually, in May, ONT provides detailed guidance for the preparation and submission of ED block program plans. This guidance updates format and content requirements, directs thresholds and conditions for reprogramming, provides specific program direction, identifies protected areas of the program, allocates funds to blocks and projects, and provides planning, review, and approval procedures and schedule.

2.4.3.4 Block Program Plans. Block Program Plans are submitted by each claimant in mid-July to document their program proposals for the execution year and POM years. In addition to plans, these documents contain sufficient technical information to allow them to serve as the consolidated sources for the status, technical content, and products of the programs. The technical information is adequate to determine when and where to transition the technologies and to identify gaps in the technology programs. Block plans, when approved, become the basis for the issuance of funding documents and execution guidance. Block plans additionally serve as the principal technical and management reference documents for the ED Program and as the baseline for measurement of progress and accomplishment during the execution year. As such, approved Block Plans serve as "contracts" between claimants and ONT.

2.4.3.5 Other documents. In addition to the major documents described above, several others are used in conduct of the ED Program.

- Claimants submit Task Summaries annually in a format for use in maintaining a computerized data base at ONT. Claimants also submit Block Quarterly Reports, monthly Funding Reports, and technical program reports.
- ONT submits an annual 6.2 Accomplishment Report.
- Advanced Technology Demonstration Proposals are used to put forward candidates for the DON Advanced Technology Demonstration (ATD) Program managed by OP-098.

2.5 SYSTEMS ACQUISITION

This section discusses planning and control for all levels of systems acquisition ranging from multi-billion dollar programs to small developments.

To help the reader understand the dynamics and interrelationships of the process, Appendix J

presents systems acquisition in the form of flow charts and associated descriptive paragraphs.

DODDIR 5000.1; DODINST 5000.2; SECNAVINSTS 4210.6, 4210.7, 5000.1; OPNAVINST 5000.42; NAVMATINST 5000.19E, (or superseding OPNAVINST), NAVMATINST 5210.4 (or superseding OPNAVINST)

2.5.1 Overview of the Process. All systems acquisitions share a common overall objective and basically the same process. However, the degree of formality, extent of documentation, and level of the decision authority vary with the magnitude of the program.

Acquisition programs involve an incremental, sequential process. Programs are structured and resources allocated so that demonstration of actual achievement of program objectives is the pacing function. Further, as the advancing program yields improved information, practical tradeoffs are made between system capability, cost, and schedule. Figure 2-2 depicts that process.

Figures 2-2, 2-3, and 2-4 present three perspectives of the acquisition process. The process depicted in these figures, particularly 2-4, provide the framework for the text of section 2.5. The columns of Figure 2-4 are discussed in 2.5.2 through 2.5.7.

2.5.1.1 Non-development items (NDI). It is fundamental DON policy that NDI systems/equipment is to be the principal means of satisfying material needs.

"It is Secretary of the Navy policy to institutionalize NDI consideration during the acquisition process to such an extent that its use becomes the rule rather than the exception."

NDI alternatives to conventional R&D must be actively considered at the outset of each new program. In response to Tentative Operational Requirements (TORs) (see 2.5.3.1), each Development Options Paper (DOP) (see 2.5.3.2) must address use of an NDI solution; or partial or

modified NDI solution where complete NDI is not feasible.

SECNAVINST 4210.7

2.5.1.2 Acquisition Strategy. The acquisition strategy covers the objectives of the program and the plan for achieving them. For major programs the strategy must be documented and is summarized in program control documents. This overall plan for producing and supporting the system is tailored to the unique circumstances of each program. The strategy emphasizes program structure, particularly timing of T&E periods in relation to milestone decisions.

DODDIR 5000.1, DODINST 5000.2; SECNAVINST 5000.1; OPNAVINST 5000.42

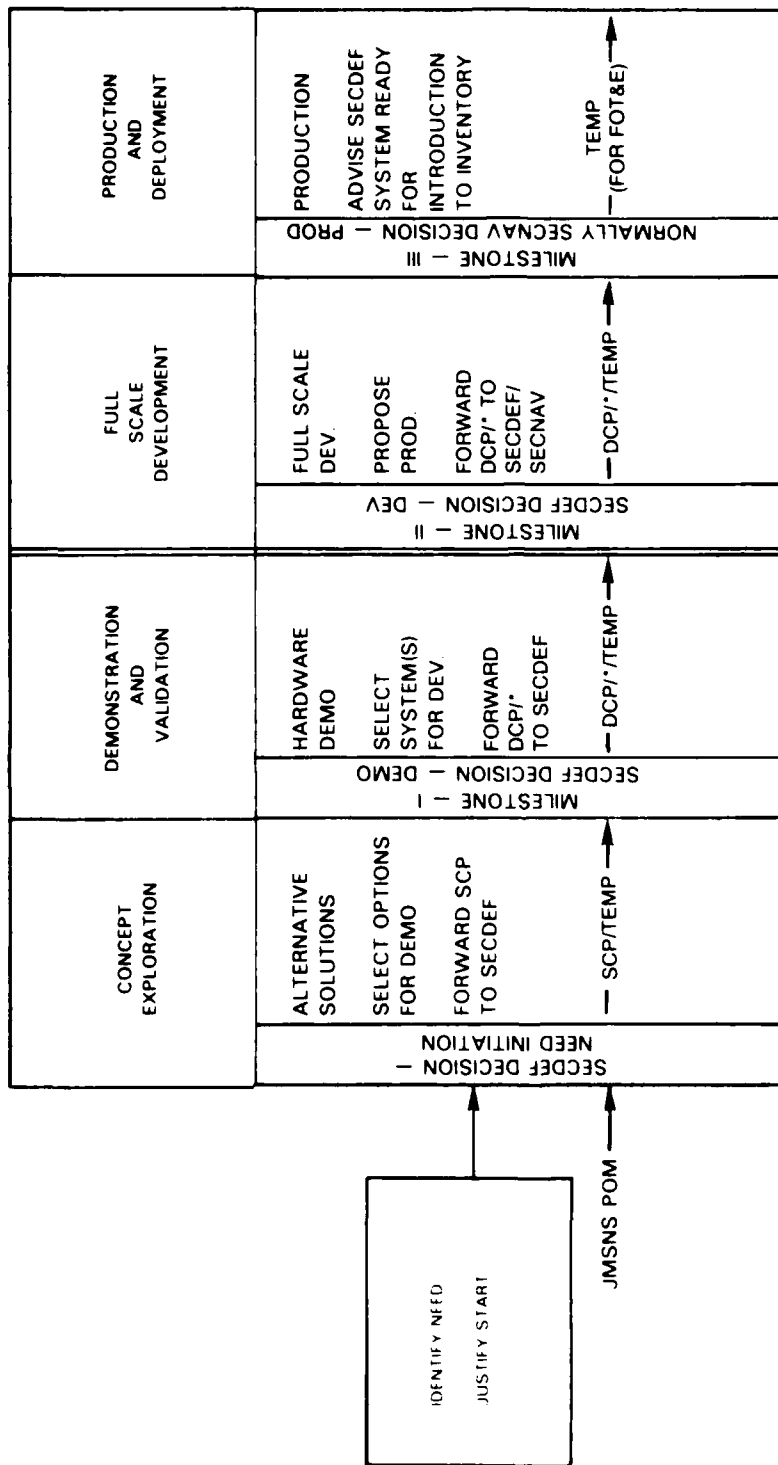
2.5.1.3 Program Structure. Program structure defines the relationships between development phases, T&E periods, decision milestones, and production release. Normally every program document and presentation includes a program structure diagram (see Figure 2-3) which illustrates these relationships.

Key elements of program structure are the decision milestone through which the program advances into the next phase, and T&E phases which generate information on actual progress as inputs into milestone decisions.

DODINST 5000.2; OPNAVINST 5000.42

2.5.1.4 Test and Evaluation. T&E is the major control mechanism of the acquisition process. Programs advance from one phase to the next, or qualify for major new funding increments, not by calendar or planned schedule, but by actual achievements of pre-set thresholds, verified by T&E. T&E is covered in Chapter 7.

DODINST 5000.3; OPNAVINST 3960.10



*SECDEF MAY REQUIRE AN IPS

Figure 2-2. Defense Major System Acquisition Process

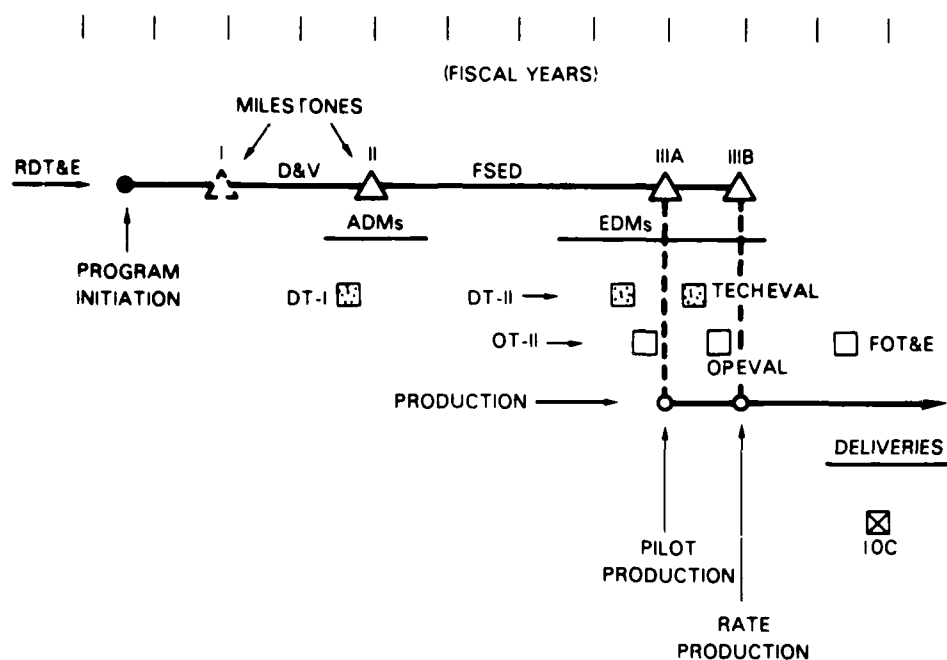


Figure 2-3. Typical Program Structure

ACAT	THRESHOLDS (RDT&E/PROD)	EVENT/ MILESTONE	PROGRAM DOCUMENT(S)	DECISION FORUM	DECISION AUTHORITY	DECISION DOCUMENT
I	200M/1B or as directed by SECDEF	Program Initiation	JMSNS	DRB	SECDEF	PDM
		MS I	SCP/TEMP	JRMB		SDDM
		MS II	DCP/IPS**/TEMP		NPDM	SECNAV (***)
		MS III	DCP/TEMP			
II	100M/500M or as directed by SECNAV	Program Initiation	OR or ROC	(None) NPDM	SECNAV	POM
		MS I/II/III	NDCP/TEMP			SNDM
III	As directed by OP-098/ ACMC	Program Initiation	OR or ROC	(None) NPDM MCPDM	OP-098 or HQMC-DC/S (RD&S)	POM
		MS */II/III	TEMP			DADM
IV	Other acqui- sitions not designated higher ACAT	Program Initiation	OR or ROC	(None) NPDM/IPR	Navy or Marine Corps PEO	POM
		MS */I/III	TEMP			DADM

Figure 2-4. System Acquisition in the Department of the Navy

2.5.1.5 Pre-Milestone Program Review Process. Programs are subjected to a thorough review, usually culminating in a formal meeting of the review group, in preparation for a milestone decision. The process typically ranges from six months for a major program to two months for a small project.

The additional time for the large programs is accounted for largely by the sequential nature of the process where the program is reviewed by lower-level decision forums before reaching the one listed on Figure 2-4, the forum in support of the decision authority.

Preliminary activities usually include review of T&E reports, informal briefings and discussions to define and resolve issues, and revision of drafts of the program documents. If all substantive issues have been resolved through this process, the applicable Acquisition Executive may recommend that the decision authority issue his decision memorandum without a formal meeting of the review group.

2.5.1.6 Approval for production. The Navy exercises rigorous, high-level control of the production approval process to ensure that all equipment reaching the fleet—even that from the earliest production lots—meets the intended standards of performance, reliability, maintainability, and logistic supportability.

At Milestone III, the decision authority makes one of three production decisions:

- Approved for full production (AFP)
- Approved for limited production (ALP)
- Not approved for production.

*OPNAVINST 5000.42; NAVMATINST 5000.19E
(or superseding OPNAVINST)*

2.5.1.7 Thresholds. The objectives for performance, operational capabilities, costs, schedule, etc. to be achieved in each phase of an acquisition are defined in terms of "thresholds".

They define levels which, if not achieved (or exceeded for cost and schedule), will lead to review of the program and its possible termination or reorientation. Thresholds are defined in terms which can be verified by measurement.

DODINST 5000.2; OPNAVINST 5000.42

2.5.2 Navy Acquisition Categories (ACAT). The amount of high-level attention, extent of documentation, and degree of formality in carrying out the acquisition process are a function of the program's ACAT level as depicted in Figure 2-4.

SECNAVINST 5000.1; OPNAVINST 5000.42

2.5.2.1 ACAT I. ACAT I includes programs with estimated RDT&E costs in excess of \$200 million or production costs in excess of \$1 billion (FY 1980 \$) and such other programs as SECDEF designates. SECDEF is the Decision Authority.

2.5.2.2 ACAT II. This category includes programs below the ACAT I level whose total costs are expected to exceed \$100 million RDT&E, and/or \$500 million for procurement (FY 1980 \$), and such other programs as the decision authority designates. SECNAV is the Decision Authority.

2.5.2.3 ACAT III. ACAT III includes programs below the ACAT II level so designated by CNO/CMC. Decision authority is OP-098 or HQMC-DC/S (RD&S). Programs are designated in this category if they affect the military characteristics of ships or aircraft, directly affect the Navy's combat capability, or could be expected to interact with the enemy.

2.5.2.4 ACAT IV. ACAT IV includes programs not in a higher category. The SYSCOM Commander is the decision authority.

2.5.3 Program Initiation. Procedures for starting RDT&E/acquisition programs are

designed to put maximum emphasis on early determination of affordability and to ensure that the initiation process is tightly controlled by high-level decision makers (see Appendix J steps 1-9). Success in the program initiation process results in inclusion of the program in the POM based on approval of an OR or JMSNS. These and preceding documents are discussed below.

DODDIR 5000.1, DODINST 5000.2; SECNAV-INSTS 4210.7, 5000.1; OPNAVINST 5000.42

2.5.3.1 Tentative Operational Requirement (TOR). When the need for a new system is perceived and is believed to be affordable, OPNAV transmits a TOR to the Space and Naval Warfare Systems Command (SPAWARSYSCOM) describing the desired capability in general terms. SPAWARSYSCOM reviews the TOR, identifies Warfare Systems Engineer (WSE) and Warfare Systems Architecture (WSA) standards to be used in formulation of the Development Options Paper (DOP), and forwards the TOR, with guidance, to the appropriate SYSCOM commander for formulation and submission of a DOP.

2.5.3.2 Development Options Paper (DOP). In response to a TOR, options are explored in the cognizant SYSCOM and a DOP is prepared. The DOP outlines a menu of alternatives ranging from austere upgrades of existing systems to advanced systems of great capability and cost with later IOCs. Options may be presented as a series of alternatives or in the form of cost-capability curves for key system parameters. The completed DOP is routed, first to SPAWARSYSCOM, where it is reviewed for compliance with WSE and WSA standards, and then to the OPNAV resource sponsor. The DOP must address use of an NDI solution (see 2.5.1.1).

2.5.3.3 Operational Requirement (OR). OPNAV's selection of the system to be pursued is documented in an OR (or JMSNS for an ACAT I program). Issuance of the OR (or JMSNS) documents firm commitment by the OPNAV Resource Sponsor to support the resulting program in the POM and budget process.

2.5.3.4 Marine Corps Required Operational Capability (ROC). (See discussion of the ROC in 2.5.9 below.)

2.5.3.5 Justification for Major System New Start (JMSNS). Limited to three pages, the JMSNS provides concise statements of:

- Defense Guidance element to which system responds
- Mission area, role of the system within the area, and threat
- Alternative concepts
- Technology involved
- Funding implications
- Constraints
- Acquisition strategy.

The JMSNS is submitted by the Service with its Program Objectives Memorandum (see 3.3.10). Approval of inclusion in the POM by the SECDEF's Program Decision Memorandum provides official sanction of the new start and authorizes the Service to initiate the next program phase. This SECDEF decision is Mission Needs Determination (Milestone 0) (see 2.5.4.1).

DODDIR 5000.1, DODINST 5000.2

2.5.4 Decision Milestones. Essential high-level control of the acquisition process is accomplished through go/no-go decisions by the Decision Authority at key program transition points, or "milestones." Milestone decisions are made by the Decision Authority with particular emphasis on test results.

When a program has progressed so that it is ready for transition to the next phase, appropriate documentation is prepared or updated and a request to proceed with the next program phase is submitted to the cognizant acquisition executive.

REMINDER: The Guide's function is to help the reader understand the overall system and identify sources of more detailed information. As ASN(R,E&S) stated in his Foreword, "The Guide ... cannot be cited as authority for official actions."

The milestone decision (except for the final Milestone III) includes thresholds and other criteria to be satisfied by the next milestone. These conditions to be met are set forth in the decision document.

For a graphic presentation of the milestone decision process, see Appendix J, steps 10-23.

DODDIR 5000.1; SECNAVINST 5000.1; OPNAV-INST 5000.42

2.5.4.1 Mission need determination (Milestone 0). For major systems, submission of the JMSNS with the Service POM leads to the first SECDEF decision. Approval of inclusion in the POM by the SECDEF's Program Decision Memorandum (PDM) provides official sanction of the new start and authorizes the Service to initiate the next program phase.

2.5.4.2 Milestone I—Demonstration and Validation (D&V). The Milestone I decision is a validation of the requirement, based upon preliminary evaluation of concepts, costs, schedule, readiness objectives, and affordability. It provides authority to proceed with the demonstration and validation phase and to develop the system sufficiently to support a Milestone II decision. A review of the acquisition strategy may be substituted for a formal Milestone I review for those programs not requiring a discrete demonstration and validation phase.

For all programs, a major consideration at the time of Milestone I is the provision of adequate RDT&E funding prior to Milestone II for sound technical work and in-depth design and engineering. For ACAT III and IV programs, Milestone I will normally be eliminated.

2.5.4.3 Milestone II—Full-Scale Engineering Development (FSED). Milestone II

decision authorizes entry into full-scale engineering development. For most programs, pilot production will occur during this phase. It is the single most critical decision point as it constitutes a firm commitment to the program. Milestone II approval is based on demonstration that:

- Engineering efforts, rather than experimental work, are now required
- The best technical and support approaches have been selected
- Technical and operational risks have been reduced to acceptable levels
- The cost-effectiveness of the proposed system is favorable in relation to competing items, Navy-wide; and that the cost of development, production, deployment, operation, and support is affordable even if overall Navy budget levels are significantly reduced
- The technology needed is at hand.

2.5.4.4 Milestone III—Production. At this point, transition to production will be authorized. Operational suitability, including logistic supportability, is a major factor in the production decision. SECDEF normally delegates Milestone III decision(s) to SECNAV for ACAT I programs where thresholds are met.

For large programs, "transition to production" is more of a phase than a single point and involves multiple Milestone III decisions, e.g. IIIA for limited production, IIIB for rate production (see 2.5.1.6 on "approval for production").

2.5.4.5 Other decisions. Events external or internal to a program, such as Congressional funding action or threatened breach of a threshold, may require a program review and decision by the applicable decision authority in addition to the milestone decisions.

2.5.5 Program Documents. Program documents support milestone decisions and when approved, constitute a "contract" between the decision authority and the program manager concerning management of the program.

While the maximum length of the documents varies by a factor of six or more, they typically address the same issues: program rationale, expected benefits from successful development, expected costs, risks, acquisition strategy, and thresholds. Annexes typically include a program structure diagram (see Figure 2-3), thresholds, and funding requirements and profile.

DODDIR 5000.1, DODINST 5000.2; OPNAVINST 5000.42

2.5.5.1 System Concept Paper (SCP). An SCP is required for the Milestone I decision for ACAT I programs. The SCP identifies program alternatives based upon initial studies and analyses of design concepts; alternative acquisition strategies; expected operational capabilities; industrial-base capacity; readiness, support, and personnel requirements; and cost estimates. It is constrained to 12 pages.

2.5.5.2 Decision Coordinating Paper (DCP). DCPs are prepared for SECDEF's Milestone II decision for ACAT I programs and are updated for the Milestone III decision. The SCP and DCP are similar in content and outline. The DCP is limited to 18 pages. The additional length of the DCP is accounted for by expanded discussion of the description of the selected alternative and technological risks.

2.5.5.3 Integrated Program Summary (IPS). The IPS amplifies information in the DCP. The DAE (see 1.2.4) may require submission of an IPS if he believes the DCP does not provide sufficient information for consideration by the JRMB.

2.5.5.4 Navy Decision Coordinating Paper (NDCP). The NDCP is the control document for ACAT II programs. Similar in content

and function to the SCP/DCP, it is constrained to 3 pages exclusive of the cover page and annexes.

SECNAVINST 5000.1

2.5.5.5 T&E Master Plan (TEMP). A TEMP is required for all milestone decisions for all programs. For ACAT III and IV programs, the TEMP is the single document by which the program is controlled (see 7.5.3).

DODDIR 5000.3; OPNAVINST 3960.10

2.5.5.6 Flash Report. The Flash Report is a one-page summary of a Milestone II or III decision on an ACAT IIC, III, or IV program. Its purpose is to provide for SECNAV participation in DON acquisition programs. The report is required for all Milestone II decisions and for Milestone III decision on SECNAV Special Interest Programs.

2.5.5.7 Nonacquisition Program Definition Document (NAPDD). The NAPDD is used to define and direct programs in Advanced and Engineering Development which explore technology or conduct system integration with no directly related procurement. Small nonacquisition (nonACAT) programs (under \$200K per year or \$1M total) do not require a NAPDD.

2.5.6 Decision Forums. In preparation for milestone decisions, the control document or documents are reviewed by a group which makes recommendations to the decision authority. Membership includes officials and representatives of organizations with a vital interest in the program. The size of the group and level of the members varies with the ACAT level of the program.

DODDIR 5000.1, DODINST 5000.2

2.5.6.1 Defense Resources Board (DRB). The DRB helps SECDEF manage the entire plan-

ning, programming, and budgeting process, including initiation of major acquisition programs. Chaired by DEPSECDEF, members include Chairman JCS; Secretaries of the Army, Navy, and Air Force; Undersecretaries of Defense (P) and (R&E); ASDs (R&E), (HA), (A&L), (FM&P), (PA&E), (C), (ISP); and the Associate Director of the OMB. (See also E9.6.)

2.5.6.2 Joint Requirements and Management Board (JRMB). The JRMB (formerly DSARC) is chaired by USDRE, for Milestone I and II decisions, and by ASD (Acquisition and Logistics (ASD(AL))—for Milestone III. Its membership also includes the Under Secretary of Defense for Policy; Assistant Secretaries of Defense (Force Management and Personnel), (Comptroller), and, for reviews concerning systems, Command, Control, Communications, and Intelligence (C³I); the Service Secretaries, for major acquisitions involving their departments; the Director Operational Test and Evaluation (DOT&E); the Director, Program Analysis and Evaluation (DPA&E); and the Chairman, Joint Chiefs of Staff or his designee.

The JRMB permanent advisors are: Deputy Under Secretaries of Defense (Strategic and Theater Nuclear Forces), (Tactical Warfare Programs), and (Test and Evaluation); Deputy Assistant Secretaries of Defense (Procurement), and (C³I); Director, DIA; Director, Weapon Support Improvement Group; and the Chairman, Cost Analysis Improvement Group.

Administrative duties are carried out by the Executive Secretary, for JRMB matters in general, and by an OSD action officer for each major system. Both are appointed by the JRMB Chair (see E9.2).

2.5.6.3 Navy Program Decision Meeting (NPDM). The NPDM is the forum for discussion leading to program decisions on all system acquisition programs. The Commander of the cognizant SYSCOM is responsible for preparation, review and presentation of NPDMs for a given program. The NPDM is informally identified, and its membership determined by the level and content of the program under consideration.

- **NPDM I and II**—For ACAT I and II programs, NPDM members are the Assistant Secretaries; General Counsel; Director, Office of Program Appraisal; Chief of Naval Operations, and Commandant of the Marine Corps. For ACAT I programs, the Navy Acquisition Executive (NAE) (see 1.4.7.1) normally chairs the NPDM, unless SECNAV elects to chair or to delegate the chair to the Under Secretary of the Navy. The chairman for ACAT II programs is the NAE. The CMC normally attends only NPDMs that concern Marine Corps requirements (see E9.7).
- **NPDM III**—For ACAT III programs. NPDM regular members include OP-098 (Chairman), the Program Resource Sponsor, OP-090, OP-095, OP-01, OP-04, COMOPTEVFOR, and the appropriate SYSCOM. Ad hoc members participate as required.

SECNAVINST 5420.188

2.5.6.4 Acquisition Review Board (ARB). ARBs review all programs for the cognizant system commanders. They are chaired by SYSCOM officials, depending on the level of the program—the SYSCOM Commander or Vice Commander for ACAT I or II programs. The ARB is the NPDM for ACAT IV programs (see E9.8).

2.5.6.5 Ship Characteristics and Improvement Board (SCIB). The SCIB, a sub-panel of the CNO Executive Board (CEB), performs the functions of the NPDM for ship acquisition programs. Permanent members are OP-03 (Chairman), OP-090, OP-095, OP-02, OP-04, OP-05, and COMNAVSEA (see E9.5.1).

OPNAVINST 5420.2

2.5.6.6 Marine Corps Program Decision Meeting (MCPDM). The MCPDM, a board of

general officers chaired by the Assistant Commandant of the Marine Corps (ACMC), reviews major Marine Corps acquisition programs at milestone decision points and makes recommendations to CMC. For lesser programs there is an In-Progress Review (IPR) chaired by the Chief of Staff. (See E9.4.)

MCO P5000.10

2.5.7 Decision Documents. Decision documents record decisions of the decision authority at program initiation and milestone decision points. The major decision document is the POM since the central program issue is whether or not to fund and at what level. However, the funding decision is amplified by a decision memorandum.

2.5.7.1 Secretary of Defense Decision Memorandum (SDDM). In the SDDM, SECDEF documents his decision, establishes program goals and thresholds, reaffirms established needs and program objectives, authorizes any exceptions to acquisition policy, and provides direction and guidance to OSD, OJCS, and the DON for the next phase of the acquisition.

DODDIR 5000.1, DODINST 5000.2

2.5.7.2 SECNAV Decision Memorandum (SNDM). Program decisions by SECNAV are documented in SNDMs. The SNDM is analogous to the SDDM.

SECNAVINST 5000.1

2.5.7.3 Decision Authority Decision Memorandum (DADM). DADM is a generic term denoting the document used to record program decisions of various decision authorities for milestone decisions. These documents are analogous to the SDDM and SNDM. Acquisition Decision Memoranda (ADM) are used to document program decisions by Marine Corps decision authorities.

2.5.8 Ship Requirements and Specifications. Requirements and specifications for ships evolve through a systematic User-Supplier dialog designed to produce a ship type that maximizes military worth in relation to life-cycle cost.

Top Level Requirements (TLR) and Top Level Specifications (TLS) evolve through an iterative process as the ship design progresses. Requirements are not finally frozen until late in the design process, when the feasibility and cost of meeting various levels of performance have been established with a high level of confidence.

Ship characteristics and specifications are submitted to the SCIB for approval before promulgation.

OPNAVINST 9010.300

2.5.9 Documentation of Marine Corps Requirements. Marine Corps Science and Technology Objectives (STOs) have two principal purposes: (1) to describe new capabilities needed and (2) to provide scientific and technical solutions to the problems of implementing the concepts and operational capabilities (i.e. technology base) enunciated in the Marine Corps Long-Range Study and Marine Corps Long-Range Plan (MLRP) from which, for the most part, they are generated.

The Required Operational Capability (ROC) is used to document a requirement for a system to be developed specifically to meet a Marine Corps need (as distinguished from Marine Corps adoption of material developed to meet the needs of the developing Service). The ROC is a brief statement of a specific operational capability that is required in the mid-range period. It includes a statement of the need, a description of the threat or operational deficiency to be overcome, minimum essential performance bands, concepts of employment, technical assessment, energy effectiveness impact, and broad-based estimates of funds and personnel resources. The ROC is the primary basis for initiating and formalizing the Marine Corps acquisition process that will lead to an improved capability or to the elimination of a cited deficiency. The document will be

refined as required during the development process; however, the basic statement of need will normally not change unless the threat, operational concept, or the cited deficiency changes. The ROC solicits from the development community (SYSCOM or other appropriate Service agency) development proposal wherein alternatives and tradeoffs are considered (see 2.5.3).

Much Marine Corps material is developed by other armed services, particularly the Army. In such cases, the requirement documents of the developing services are used or slightly modified to meet MC landing force needs. This is accomplished with the addition of a Marine Corps cover letter. The Navy OR and other service requirement documents, when produced to cover Marine Corps needs, and the ROC are drafted by CG, MCDEC.

MARINE CORPS ORDERS 3900.4, P5000.10

2.6 PLANNING FOR SUPPORT

DODDIRS 5000.1, 5000.39 (SECNAV 5000.39); SECNAVINSTS 5000.1, 5000.39; OPNAVINST 5000.49

2.6.1 Integrated Logistic Support (ILS) Concept. ILS is an iterative management and technical activity to integrate readiness and support considerations into system design, schedule, cost, and acquisition.

Readiness is achieved through the ability to assess the design/support interface, develop maintenance planning, and implement cost-effective life-cycle support. ILS influences design and evolves life-cycle support through Logistics Support Analysis (LSA). Resources to achieve readiness and availability are given equal weight with performance considerations during competitive source selections. ILS assessment and subsequent tradeoffs serve to provide the required support during the operations phase at minimum cost.

The elements of logistic support, the development of which must be planned in a coherent and integrated manner, are:

- Maintenance planning
- Manpower and personnel
- Supply support
- Support equipment
- Technical data
- Training and training support
- Computer resources support
- Facilities
- Packaging, handling, storage, transportation, and
- Design interface.

2.6.2 New Facilities Incidental to RDT&E Effort. Construction of new facilities required in support of RDT&E projects involves special problems. The funds for constructing facilities are provided by the Military Construction (MILCON) appropriation. Except for very minor construction or modifications, it is illegal to use RDT&E funds to pay for construction. Thus, the need for facilities to support RDT&E effort must be anticipated long in advance, and timely measures taken to meet the requirements for obtaining funds through the MILCON appropriation.

DODINST 7040.4 (SECNAV 7045.9)

2.6.3 Personnel. Personnel necessary for the development or deployment of a new system are a special planning problem owing to the leadtimes involved. Often the training of personnel may take longer than development and production of the hardware they are to operate.

In addition to the leadtime required for training, advance preparation is necessary because of

the controls involved. All personnel levels are tightly controlled within the framework of the Five-Year Defense Program. Thus, requirements must be anticipated long in advance and the necessary measures taken to secure timely authorizations through the programming system.

OPNAVINST 1500.8

2.7 COST CONSIDERATIONS

It is the inherent obligation of overall Defense management to provide the highest mission capability possible within the limits of the resources the country chooses to allocate to its Defense. As DOD Directive 5000.1 states,

A cost-effective balance must be achieved among acquisition costs, ownership costs, . . . , and system effectiveness in terms of the mission to be performed.

This section deals with concepts, policies, and institutional arrangements related to cost considerations in the RDT&E and acquisition of mission effective, cost-effective, and affordable weapons.

DODINSTS 4245.3, 7000.3 (SECNAV 7700.5), 7041.3 (SECNAV 7000.14 and OPNAV 7000.18); DODDIRS 5000.1, 5000.4 (SECNAV 7000.19); SECNAVINSTS 7000.14, 7000.19, 7700.5; OPNAVINST 7000.17, 7000.18; DON Programming Manual

Directives listed following the introduction to a section generally apply to all the following information in the section and are not repeated.

2.7.1 Economic Analysis. Economic analysis is a means of systematically considering benefit and cost in decisions, particularly investment decisions. In conducting economic analysis, objectives and alternatives are searched out and compared in the light of their benefits and costs through the use of an appropriate analytical framework.

Economic analysis is required in support of the acquisition of major systems. The results of this analysis are summarized in the DCP (for major systems) or other documentation and provide the basis for subsequent program evaluation.

2.7.2 Design-to-Cost. In the planning of development programs, cost parameters are established to reflect the cost of acquisition and ownership. Discrete cost projection elements (e.g., unit production cost, operating and support cost) are established as "design-to" requirements. System development is continuously evaluated against these design-to-cost goals with the same rigor as applied to technical requirements. Design-to-cost applies to most systems to be produced in significant quantities.

2.7.3 Cost Estimation and Analysis. Much emphasis is placed on improving the capability to estimate the probable cost of developing, procuring, operating, and supporting proposed weapon systems. Cost estimating dominates every phase of Navy planning, programming, and budgeting. The cost of development and acquisition, along with recurring costs of ownership, must be estimated accurately if realistic Navy programming and wise decision making are to result.

2.7.3.1 Cost analysis responsibilities. Cost estimates for a proposed development program are prepared by the Principal Developing Activity (PDA). Independent cost estimates are made by the Director of Navy Program Planning (OP-090) within OPNAV before initiation of the JRMB process. The DOD Cost Analysis Improvement Group (CAIG) then provides the JRMB with a review and evaluation of both the program cost estimates prepared by the PDA and the independent estimate prepared by OPNAV.

2.7.3.2 Costing methodologies. Two basic approaches to estimating costs are (1) to work from detailed estimates of the cost of work packages to derive the overall estimate, or (2) to start from the overall characteristics of the system and estimate probable cost by deduction.

Under the detailed estimating approach, the elements of the system and the work required to develop, acquire, operate, and support them are

2.7.3.3

identified in considerable detail. These cost elements are based on the Work Breakdown Structure (WBS) of MIL-STD-881. With the elements identified, total program cost is estimated by adding the costs of the individual work packages and adding appropriate burden (overhead) figures.

Parametric costing, on the other hand, starts with the overall characteristics of the system—size, complexity, performance level sought—to estimate the cost of a new system. For example, from historical information on the cost of developing past aircraft and their weight, a gross estimate can be made of the probable cost of developing a new 50,000-pound fighter.

2.7.3.3 Classes of baseline cost estimates.

Many so-called "cost overruns" are the result of comparing the actual cost of developing a system against early cost estimates made before either the system was fully defined or the number to be procured was established. Cost estimates range from the first rough estimate to figures based on audits of actual costs incurred. OPNAV Instruction 7000.17 describes seven levels of cost estimates ranging from Class A—highest level of confidence—to Class X—a "directed or modified estimate." Descriptions of these estimates are in Appendix C, Section C2.

Technically, the term "cost overrun" denotes the difference between actual cost experienced and the estimated cost included in a contract.

"Cost growth," a more generic term, refers to the net change of current estimates over a base figure previously established. Thus, changes in estimates of the total cost of the program, made as the program progresses, should properly be termed cost growth rather than, as they often are, cost overruns.

2.7.3.4 Standard weapon system costs. In the past, considerable confusion has resulted from the release of estimates of the cost of weapon systems that were based on different cost elements. To eliminate this confusion, standard definitions were prescribed for the terms "Flyaway Cost," "Weapon System Cost," "Procurement Cost," and "Program Acquisition Cost." Defini-

tions of these terms are in Appendix C, Section C8.

2.7.3.5 Navy Cost Information System (NCIS). NCIS is essentially a data bank, designed to provide and display Navy program and cost information in a variety of reports expressed in either appropriation structure or DOD programming structure, using computerized automatic data processing.

2.7.3.6 Life Cycle Cost (LCC). Life cycle cost is the total cost to the government for the development, acquisition, operation, and logistic support of a system over a defined life span. Life-cycle-cost estimates are an inherent part of economic analysis and are thus required for all major RDT&E programs (see discussion of economic analysis in paragraph 2.7.1 and related references).

2.7.4 Incremental Acquisition Strategy. Even with the ultimate in ability to project the true cost of RDT&E programs, there is still great uncertainty associated with the technical performance which can be achieved, how long it will take to achieve that performance, how much it will cost, and the value of the related operational capabilities once they become available. Thus, it is policy to pursue development programs through an incremental, sequential strategy under which program decisions on further work are made on the basis of successful passing of achievement milestones. Programs are structured and resources allocated so that demonstration of actual achievement of program objectives is the pacing function. Further, as the advancing program yields improved information, practical tradeoffs are made between system capability, cost, and schedule.

A demonstration milestone funding strategy, also practiced by Congress, requires submission of the latest test results along with requests for funds for procurement of weapons (see G1 of Appendix G for excerpts from sections of Chapter 4 of Title 10, U.S. Code that establishes this requirement).

2.7.5 Cost Measurement and Reporting. As programs unfold, costs are collected and cost information is reported to various monitors and

decision makers. For selected major programs, one primary report is the SAR (Selected Acquisition Report). The SAR is designed to meet needs of top management in the Office of the Secretary of Defense and for OSD to furnish information to the Congress and the GAO.

Submitted quarterly, SARs include retrospective information on costs, schedule and technical

achievement, and "current estimates" of operational/technical characteristics of the resulting system, as well as when it is likely to be available and its probable cost.

Other reports dealing with measurement and reporting of cost experience are discussed in 6.7.4, "Cost Reports."

SELECTED REFERENCES ON R&D PLANNING

DODDIR 5000.1, "Major System Acquisitions," establishes fundamental overall policy for systems development and acquisition. The management principles in the directive are applicable to all programs.

DODINST 5000.2, "Major System Acquisition Procedures."

DODDIR 5000.3, "Test and Evaluation."

SECNAVINST 5000.1, "System Acquisition," sets forth policies and procedures for all Navy acquisitions.

SECNAVINST 5000.39 promulgates DODDIR 5000.39, both entitled "Development of Integrated Logistic Support for Systems/Equipments." These directives establish policies and set forth principles for the coordinated planning, development, and acquisition of logistic resources required to support Navy and Marine Corps systems and equipment.

OPNAVINST 5000.42, "RDT&E/Acquisition Procedures," prescribes RDT&E/acquisition procedures in amplification of policies in DOD 5000.1.

Department of the Navy Programming Manual. Chapter II, "Planning," is the primary source of official information on the Navy Planning System.

ONRINST 3910.2, "Naval Research Requirements and the Naval Research Program Structure."

Marine Corps Order 3900.4, "Marine Corps Program Initiation and Operational Requirements Documents."

Marine Corps Order P-5000.10, "Systems Acquisition Management Manual."

Marine Corps Order 5000.15, "Marine Corps Systems Acquisition Management Policy."

JCSM-70-73, "JCS Strategic Planning System."

CHAPTER 3 PROGRAMMING FOR RDT&E

TABLE OF CONTENTS

3.1 Objectives of the DOD Programming System	3-1
3.2 Description of DOD Five-Year Defense Program (FYDP)	3-1
3.2.1 Program Element	3-1
3.2.2 Program	3-2
3.2.3 Major Programs	3-2
3.3 Documents Used in Updating the FYDP and the DNFYP	3-2
3.3.1 Defense Guidance (DG)	3-2
3.3.2 Joint Strategic Planning Document (JSPD)	3-2
3.3.3 Department of the Navy Consolidated Policy and Planning Guidance (DNCPPG)	3-2
3.3.4 CNO Policy and Planning Guidance (CPPG)	3-3
3.3.5 Appraisals	3-3
3.3.6 Consolidated Program and Fiscal Guidance (CPFG)	3-3
3.3.7 Sponsor Program Proposals (SPPs)	3-3
3.3.8 Program Assessments	3-3
3.3.9 Investment Strategy Review (ISR)	3-3
3.3.10 Department of the Navy Program Objectives Memorandum (POM)	3-3
3.3.10.1 Extended Planning Annex (EPA)	3-3
3.3.11 Joint Program Assessment Memorandum (JPAM)	3-3
3.3.12 Program Decision Memorandum (PDM)	3-4
3.3.13 "Heads-Up" Report	3-4
3.3.14 Program Management Proposal (PMP)	3-4
3.3.15 Sponsor Program Proposal Decision Document (SPPD)	3-4
3.3.16 Baseline Budget Assessment (BAM)	3-4
3.4 Program Change Process	3-4
3.4.1 The New Two-Year POM Cycle	3-4
3.4.2 Introduction to Presentation	3-4
FYDP Update Process, series of 9 flow charts and facing-page step statements beginning on page	3-6

CHAPTER 3 PROGRAMMING FOR RDT&E

NOTICE — The DON is moving to implement the recommendation of the President's Blue Ribbon Commission on Defense Management, the "Packard Commission," calling for a two-year budget and updating of the Five-Year Defense Plan (FYDP). The FYDP update process depicted in process chart form in Section 3.4 is the two-year process called for in POM 90-1 memo, "Procedures for Program Objectives Memorandum (POM) — 90."

This chapter deals with the decision process by which plans are converted into time-phased and fiscally oriented programs. Programming is the portion of the Planning, Programming, and Budgeting System (PPBS) which links planning to budgeting. The Department of the Navy Programming System is the normal process within which CNO, CMC, SECNAV, and SECDEF make decisions on modernization, force levels, readiness, and sustainability. The heart of the chapter is the flow chart presentation of the PPBS process in section 3.4.

Understanding the DOD Programming System and its objectives and implications is particularly important to RDT&E managers because, before any system development can be initiated, it first must be approved, programmed, and funded. To gain approval and funding, a program must stand up to "survival of the fittest" competition against alternative means of accomplishing the same purposes and alternative uses of the same resources.

3.1 OBJECTIVES OF THE DOD PROGRAMMING SYSTEM

- To relate resources to Defense missions and requirements. This is accomplished by identifying the resource "inputs"—men, material, and services—required for military "outputs"
- To link planning to budgeting
- To establish programs around missions rather than military departmental lines
- To provide a framework within which Services and organizations can compete to provide the forces required for missions

- To establish a rational program structure which encompasses all Defense activities
- To provide a capability for making cost-effectiveness studies of alternative force structures or weapons systems
- To appraise programs on a continuing basis
- To establish a single channel for major decisions on Defense programs.

3.2 DESCRIPTION OF DOD FIVE-YEAR DEFENSE PROGRAM (FYDP)

The FYDP is the summation of the programs of the Department of Defense components at a point in time. It relates manpower and fiscal inputs with military outputs or programs. It displays what has been accomplished in the past and what is planned to be accomplished in the future to support national strategy decisions. The FYDP displays the manpower, dollars, and forces for programs from the beginning of the PPBS system in fiscal year 1962, through the current year, plus five additional years.

Department of the Navy Programming Manual. The DON Programming Manual is the standard reference publication for operation of the DOD PPBS in the Department of the Navy.

3.2.1 Program Element. The program element is the basic building block of the Five-Year Defense Program. It describes the mission to be undertaken, identifies the organizational entities who will perform the mission assignment, and estimates costs. There are roughly 800 program elements in the entire FYDP and 400 Navy program

elements, of which about 300 are for RDT&E (see C7.2 and Figure C-3).

The DOD Program Structure Codes and Definitions Handbook (DOD 7045.7-H) promulgates the official DOD definition for each program element. Appendix A of the DON Programming Manual lists all Department of the Navy program elements.

3.2.2 Program. A DOD program is a combination of program elements designed for the accomplishment of a definite objective or plan that is specific as to the time phasing of what is to be done and the means proposed for its accomplishment. Program elements in a single program either complement each other or are possible substitutes for one another.

In understanding the system, it is important to distinguish between the meaning of "program," as used in the PPBS system described here, and the term's use to refer to an acquisition. For the latter usage, refer to the discussion of the Navy Acquisition Categories in 2.5.2.

3.2.3 Major Programs:

- 1 Strategic Forces
- 2 General Purpose Forces
- 3 Intelligence and Communications
- 4 Airlift and Sealift
- 5 Guard and Reserve Forces
- 6 Research and Development
- 7 Central Supply and Maintenance
- 8 Training, Medical, and Other General Personnel Activities
- 9 Administration and Associated Activities
- 0 Support of Other Nations.

3.3 DOCUMENTS USED IN UPDATING THE FYDP AND THE DNFYP

This section is concerned with the documents through which the decisions of the Secretary of Defense are incorporated into the computerized data bases which constitute the FYDP and the DNFYP.

The Services and Defense Agencies submit program objective memoranda and budgets, to

which the Secretary of Defense responds. A number of formal documents used in the process are discussed below.

DODINST 7045.7; DON Programming Manual; POM 90-1

3.3.1 Defense Guidance (DG). The DG provides the definitive policy, strategy, force planning, resource planning, and fiscal guidance upon which all Defense planning and programming are based. It also includes threat and opportunity assessments and statements of issues requiring further study or top management attention. Development of the DG begins in August with consultation among the SECDEF, Unified and Specified Commanders, and JCS and with submission by the JCS of the JSPD (see 3.3.2). It is developed through a number of iterations under the oversight of the Defense Resources Board (DRB) and management of USD(P), with consultation and comment as appropriate by DOD components, JCS, National Security Council, Department of State, and Office of Management and Budget. The DG is published in early January.

3.3.2 Joint Strategic Planning Document (JSPD). The JSPD is submitted for use in developing the DG. It contains a comprehensive military appraisal of the worldwide threat to U.S. interests and objectives and a statement of recommended military objectives and strategy to attain national objectives. A summary of JCS planning force levels that could with reasonable assurance execute the military strategy is included, as well as views on the attainability of these forces in consideration of fiscal, manpower, material, technological, and industrial capacity considerations. The JSPD also provides an appraisal of the capabilities and risks associated with programmed force levels and recommends changes to force planning and programming guidance where appropriate.

3.3.3 Department of the Navy Consolidated Policy and Planning Guidance (DNCP PG). The DNCP PG comprises an overall statement of Department of the Navy goals and planning objectives in specific relationship to national strategic requirements. It serves primarily to estab-

lish a DON orientation with regard to the broad range of issues. The DNCPPG is written from the intermediate-range perspective and serves as a significant means of injecting Navy influence into the formulation of the Defense Guidance.

3.3.4 CNO Policy and Planning Guidance (CPPG). The CPPG provides basic concepts, objectives, and assumptions on which the Department of the Navy Five-Year Program is to be based. In effect, the CPPG presents the strategy to be used as a guide in formulating programs in the annual planning cycle. The CPPG is organized into four sections: (1) the essence of SECDEF's Defense Guidance as it pertains to the Navy, (2) CNO's views on strategic objectives, (3) specific CNO objectives, and (4) broad guidance for POM development including guidance for the CNO Program Assessment Memoranda (CPAM).

3.3.5 Appraisals. Appraisals provide a fiscally constrained and issue/capabilities oriented overview of each area. For each Appraisal, alternatives are developed to accommodate resource constraints, addressing the impact of each alternative upon warfighting capabilities. Each Appraisal provides the analytical basis for CNO decisions regarding priorities and resource programming.

3.3.6 Consolidated Program and Fiscal Guidance (CPFG). The CPFG is issued after the Appraisals and after publication of the annual Defense Guidance (DG). It documents CNO's decisions regarding priorities and balance after completion of the DON planning process and contains groundrules for development of the POM. The CPFG includes fiscal and manpower controls and provides general and specific guidance for preparation of Sponsor Program Proposals (SPPs).

3.3.7 Sponsor Program Proposals (SPPs). SPPs present the proposals of Resource Sponsors for programs responsive to the CPFG.

3.3.8 Program Assessments. The proposed program of the Resource Sponsors as documented in the SPPs is analyzed from various perspectives—warfighting capability; research, development, and acquisition; manpower, etc.

POM 90-1

3.3.9 Investment Strategy Review (ISR). The ISR is based on an analysis of resource level projections versus requirements to highlight core programs. The ISR identifies potential savings and provides data for OSD/Legislative review.

3.3.10 Department of the Navy Program Objectives Memorandum (POM). The POM is the document in which each military department and Defense Agency recommends and describes annually its total program objectives within DOD-specified resource constraints. Program objectives are fiscally constrained. The POM includes all Department of the Navy programs. It provides all Department of the Navy with the force level objectives that have been approved by the Secretary of the Navy which are projected eight years (commencing two years after the fiscal year in which approved). The resource levels are projected five years (personnel, procurement, research and development, and supporting programs). To allow flexibility for each Service to develop balanced programs, allocation of funds is permitted between various categories and appropriations, unless specifically stated otherwise in SECDEF's Defense Guidance. The POM is prepared annually and submitted to the Secretary of Defense in May. The JCS comment on the POMs of the military departments in the JPAM (see 3.3.11).

3.3.10.1 Extended Planning Annex (EPA). The EPA is an annex to the POM which extends POM policies and programs into the future. It extends procurement funding ten years and Fleet force levels thirteen years beyond the POM. Development of the EPA is based on guidance from OSD. Sponsor inputs to the EPA constitute a rationale for forces, modernization programs, and proposed new systems projected over the EPA period. The EPA is used in OSD to understand where the POM leads and as an input to planning for the next cycle.

3.3.11 Joint Program Assessment Memorandum (JPAM). The JPAM provides a risk assessment based on the composite of the force recommendations of the Services' Program Objectives Memoranda (POMs) and includes the views of the JCS on the balance and capabilities of the POM forces and support levels. Where appropriate, the JCS recommends actions to improve

defense capabilities. In addition, JPAM develops SALT-constrained forces and provides recommendations on nuclear weapon stockpiles and on the security assistance program.

3.3.12 Program Decision Memorandum (PDM). PDMs record the decisions of the Secretary of Defense on POMs.

3.3.13 "Heads-Up" Report. "Heads-up" reports summarize funding deficiencies. They are issued by the program sponsor responsible for the SPP Assessment, e.g. OP-01 for Manpower, Personnel, and Training.

3.3.14 Program Management Proposal (PMP). The PMP process was initiated in 1982 to provide top DON management early warning of impending cost overruns. The PMP proved to be such a powerful management tool that it use has been expanded. It has proven particularly useful for controlling system configuration changes likely to result in added costs not commensurate with added benefits.

SECNAV's PMP instruction requires that every R&D and acquisition program have an approved baseline. A PMP must then be submitted to SECNAV when:

- An OR has been approved for a proposed improvement program.
- Any change is proposed in an approved baseline which will increase recurring, non-recurring, or support costs.

The PMP functions as a documented understanding among major acquisition program participants. By their signatures the

- SYSCOM Commander certifies that the program is executable for the dollars specified in the proposed change.
- The OPNAV Resource Sponsor certifies commitment to fund the proposed change.

The PMP must be approved prior to obligating or expending funds to execute the proposed program or change.

SECNAVINST 5000.33

3.3.15 Sponsor Program Proposal Decision Document (SPPD). SPPDs contain resource sponsor responses to the top five issues of each claimant.

3.3.16 Baseline Budget Assessment (BAM). A BAM provides the assessment sponsor's recommended funding prioritization to balance deficiencies identified within the program(s) assessed.

3.4 PROGRAM CHANGE PROCESS

This section looks at the program change process from the perspective of management. It is concerned with the process by which the DNFYP is normally updated and extended for an additional year.

DODINST 7045.7 (SECNAV 5000.16); SECNAV-INST 5000.16; DON Programming Manual

3.4.1 The New Two-Year POM Cycle. The process depicted below is the first use of the two-year FYDP update process culminating in submission of a two-year defense budget to Congress. Figure 3-1 provides a comparison of the old and new update cycles.

The steps outlined below culminate in the budget for the two-year period beginning 1 October 1989. The events shown below started in October 1986 and end in January 1990 with submission of the FY 90-91 budget to the Congress.

3.4.2 Introduction to Presentation. Section 3.4 presents the PPBS process in the form of flow charts and facing page descriptive paragraphs (step statements). The flow charts and associated step statements identify officials and special groups, documents, and the review and approval process. Sources of information in this Guide are referenced within the step statements.

Justification of the budget before Congressional Committees is addressed in section 4.8 of the next chapter. When appropriate, a NOTE has been added to the end of certain descriptive paragraphs to indicate that there are options to the actions called for in that paragraph or to provide some other insight into the action described.

The charts necessarily show the process as a progression of the major steps as it proceeds from initial high-level strategic decisions and guidance to the final submission by SECDEF of the DOD budget. This should not be interpreted to mean that the PPBS is linear in operation. As shown in

Fig. 3-1, the budgets for three level fiscal years are always simultaneously in work at different stages of the cycle. Iterative information flows continuously in both directions, both within and between cycles.

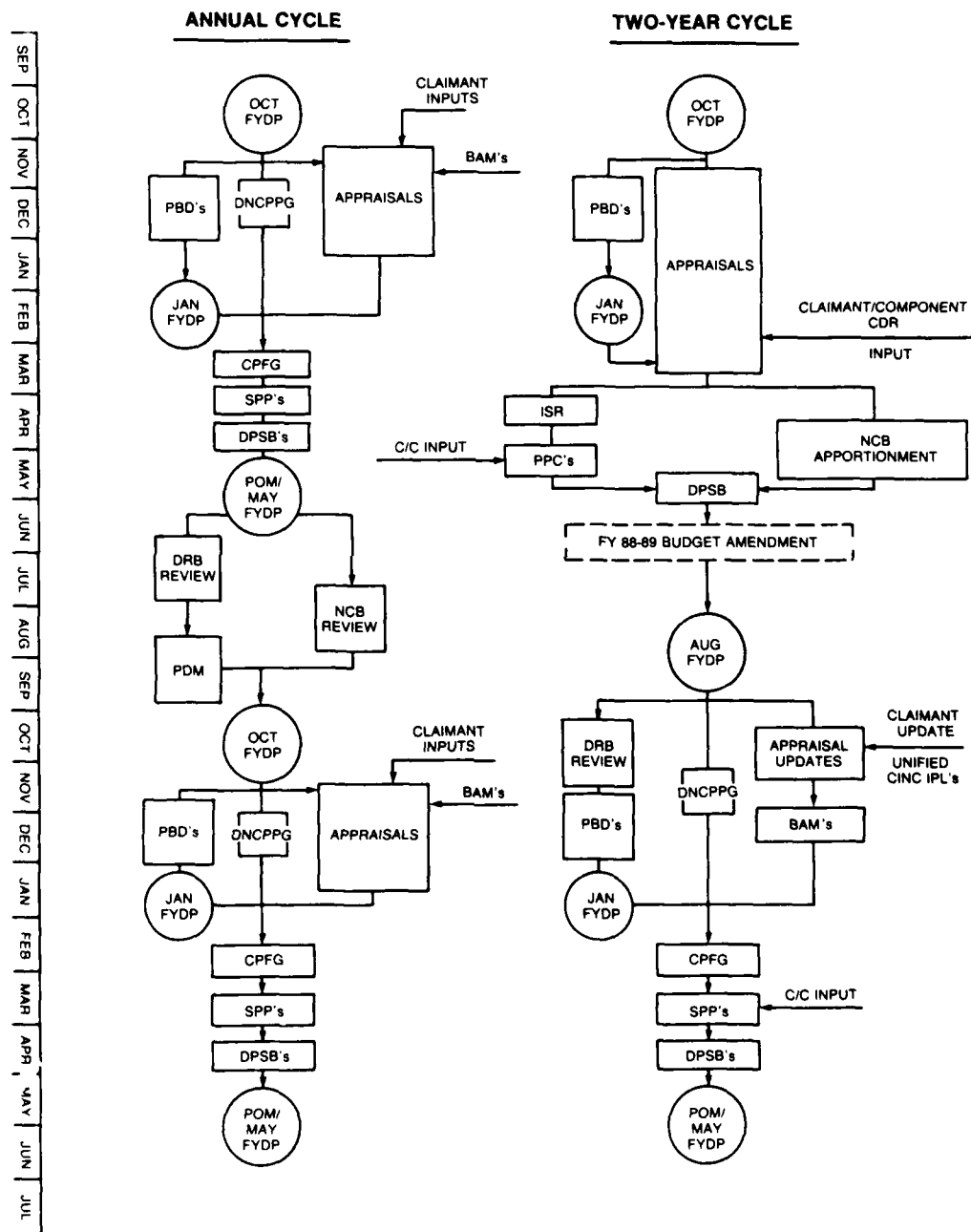
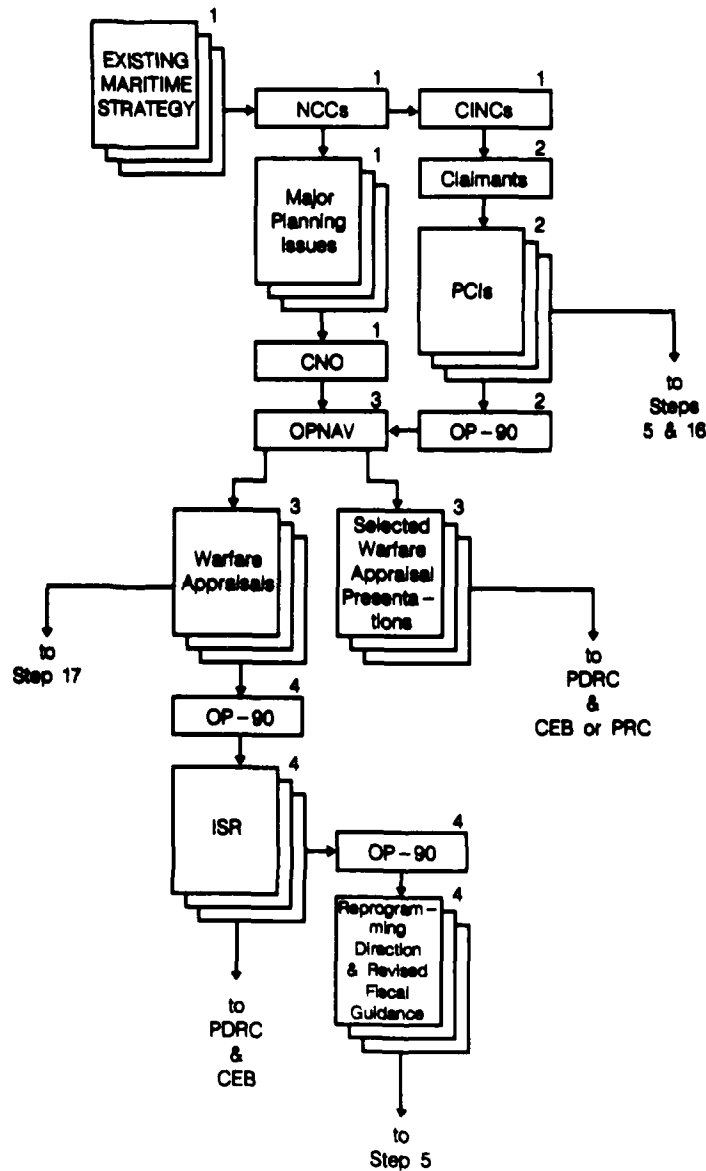


Figure 3-1. One-Year Versus Two-Year POM Cycle

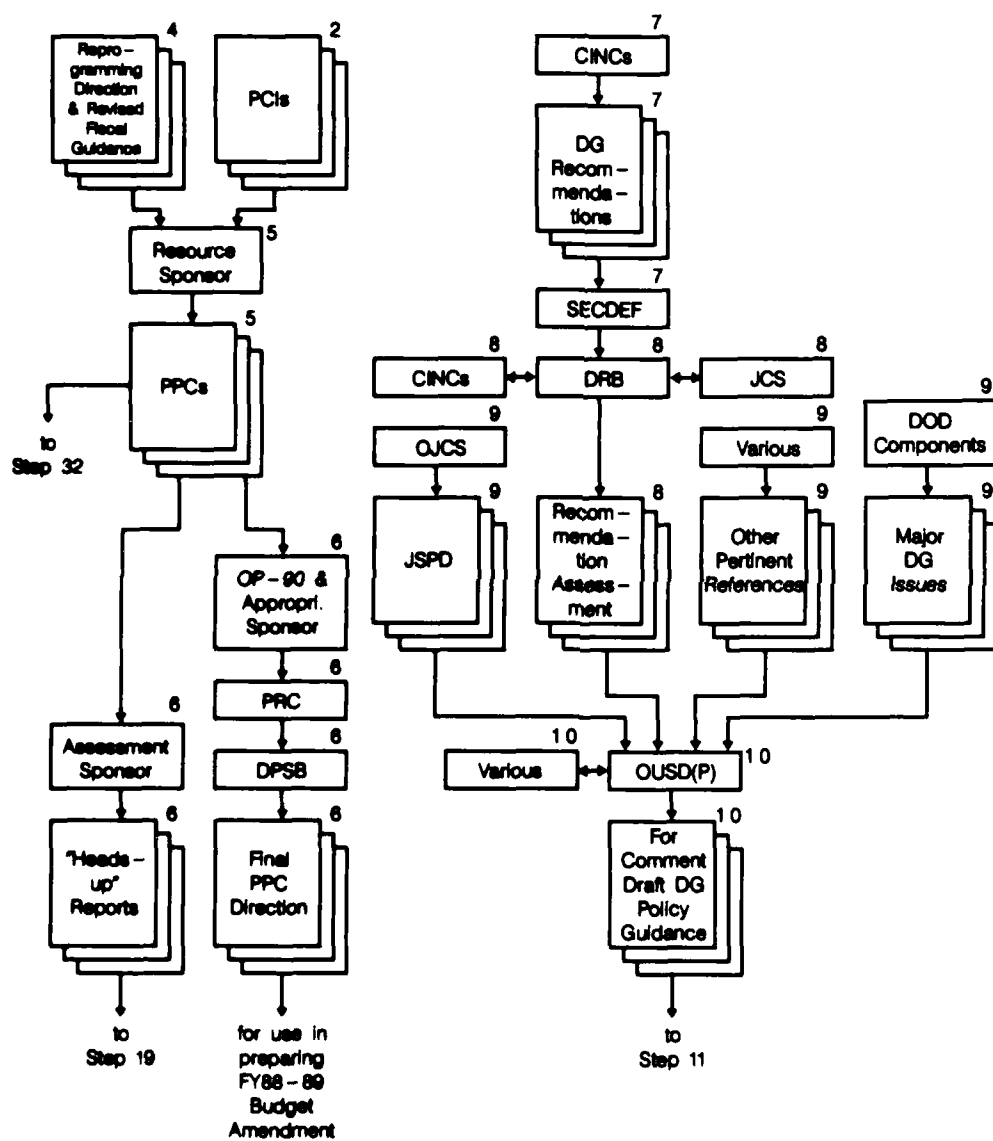
PLANNING PHASE



PLANNING PHASE (October 1986 to March 1987)

1. In October, the Navy Component Commanders (NCCs) review the Maritime Strategy and provide the CNO their perspective on major planning issues. These perspectives are the product of the dialogue between the Unified Commanders-in-Chief (CINCs) and the NCCs.
2. In February, claimants submit Preliminary Claimant Inputs (PCIs), including a statement of priorities, major issues of offsets for program adds/increases. The PCIs are submitted to OP-90 who distributes them to the cognizant Program Sponsors within OPNAV.
3. Between October and March, the Office of the Chief of Naval Operations (OPNAV) conducts a series of appraisals. Selected appraisals are presented to the Program Development Review Committee (PDRC) (see E9.10) and either the CNO Executive Board (CEB) (see E9.5) or the Program Review Committee (PRC) (see E9.10). Others are submitted in the form of documentation only.
4. In March, after the Summary Naval Warfare Appraisal (the last scheduled appraisal) has been presented to the PDRC and CEB, OP-91 presents the Investment Strategy Review (ISR) (see 3.3.9) to the PDRC and CEB. As a result of the various appraisals and the ISR, OP-90 issues necessary reprogramming direction and revised fiscal guidance to the resource sponsors.

PLANNING PHASE



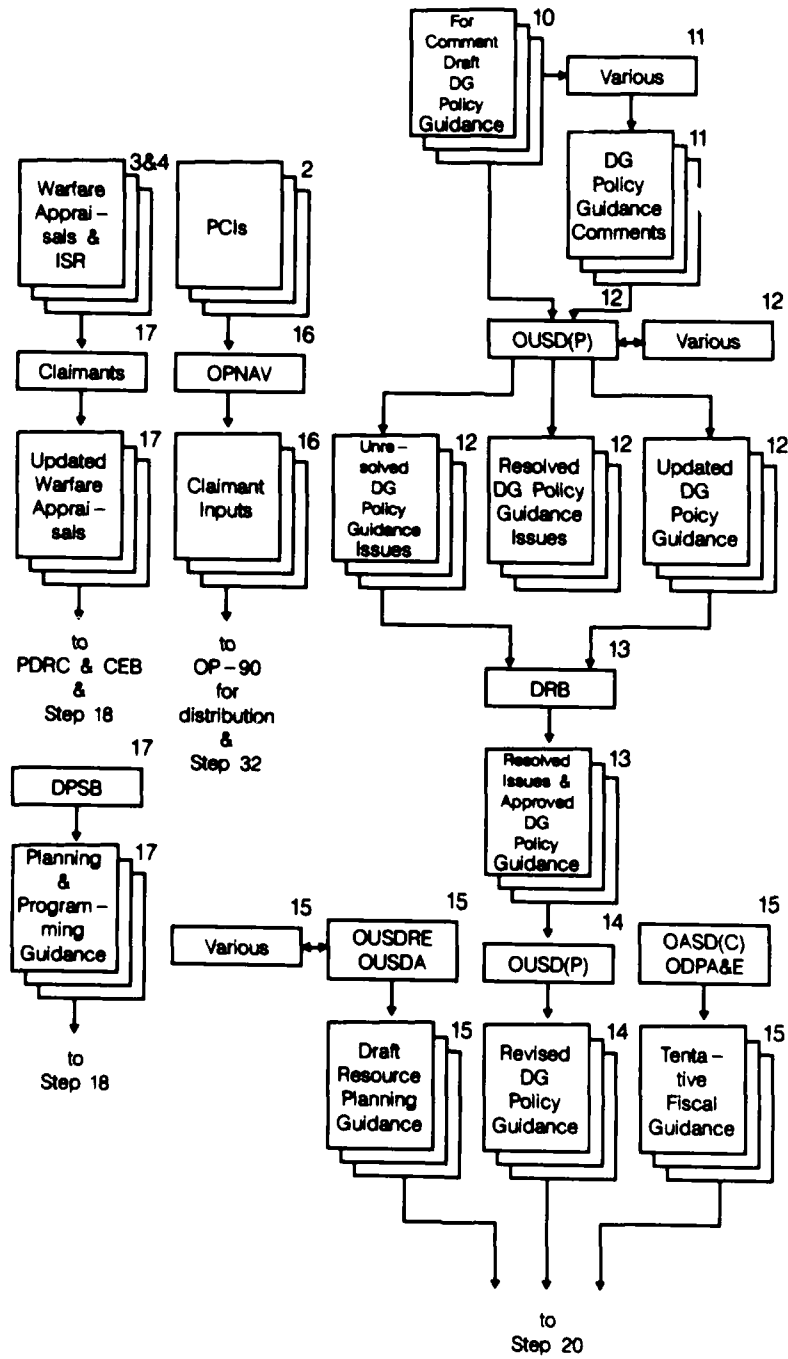
PLANNING PHASE (April to September 1987)

5. In April, the resource sponsors, based on the PCIs and OP-90 direction, develop their Proposed Program Changes (PPCs).
6. In April and May, the PPCs are reviewed in a series of meetings between OP-90, cognizant appropriation sponsor(s) and the resource sponsor(s); the PRC and the Department of the Navy Program Strategy Board (DPSB) (see E9.11). After its review, the DPSB provides its direction to the program sponsors on necessary changes. In addition, the cognizant assessment sponsors prepare and issue "Heads-up" Reports which summarize funding deficiencies considered significant.

NOTE: The PPCs are updated by the resource sponsors which form the basis for the Fiscal Year (FY) 88-89 Budget Amendment submitted to OSD in June.

7. In August, the OSD Planning Phase activity begins with the commanders of the Unified and Specified Commands CINCs preparing their personal recommendations for major changes in the previous Defense Guidance (DG) (see 3.3.1).
8. In late August, the CINCs' recommendations are furnished to the Secretary of Defense (SECDEF). After submittal, the Joint Chiefs of Staff (JCS) and the CINCs meet with the Defense Resources Board (DRB) (see E9.6) to review and assess their recommendations.
9. In late August/early September, various organizations provide major DG issues to the planning process to the SECDEF. These include: the Joint Strategic Planning Document (JSPD) (see 3.3.2) from the Organization of the JCS (OJCS); major issues which the Department of Defense (DOD) Components wish to have considered during the development of the DG; and other references pertinent to the development of Policy, Strategy and Force Planning sections of the DG.
10. In September, based on the DRB assessment of the CINCs' recommendations and the other key inputs, the Office of the Under Secretary of Defense, Policy (OUSDP) (see E1.2.2) develops, in coordination with the staffs of the DOD Components, the OJCS and the Office of the SECDEF (OSD) (see E1) a "For Comment" draft of the Policy Guidance section of the Threat Assessment, Policy, Strategy and Force Planning part of the DG.

PLANNING PHASE



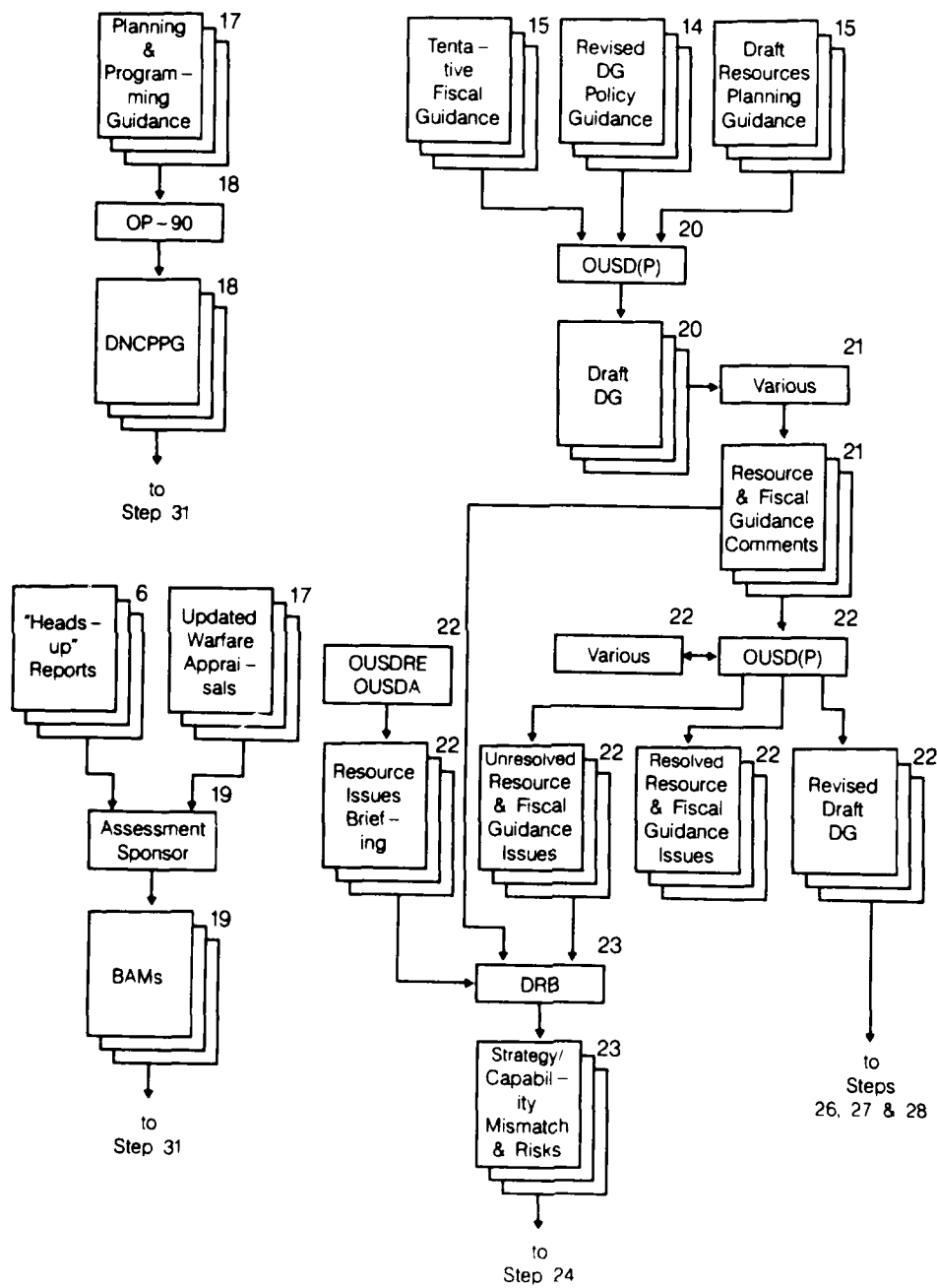
PLANNING PHASE (October 1987)

11. In early October, the OUSD(P) provides the For Comment Draft Policy Guidance section of the DG to the DOD Components, the CINCs, the staff of the National Security Council (NSC), the Department of State and the Office of Management and Budget (OMB) for review and comment.
12. Before mid-October, the various comments are submitted to the OUSD(P). Where possible, issues raised by the comments are resolved between the various staffs and incorporated in an updated Policy Guidance section of the DG. Other issues are identified as requiring DRB review and resolution.
13. In late October, the DRBV meets to resolve the remaining issues and to review and approve and/or modify the updated Policy Guidance section of the DG.
14. In late October, the OUSD(P) revises, as necessary, the updated Policy Guidance section of the DG.
15. In September/October, the Under Secretary of Defense, Research and Engineering (USDR&E) (see E1.1) and the Office of the Under Secretary of Defense, Acquisition (OUSDA), in coordination with the Office of the Assistant Secretary of Defense, Comptroller (OASD(C)) (see E1.4), the *Office of the Director, Program Analysis and Evaluation* (ODPA&E) (see E1.6) and the staffs of the DOD Components, the OJCS and the OSD, prepare a draft Resources Planning Guidance. At the same time, the OASD(C) and the ODPA&E prepare a Tentative Fiscal Guidance.
16. In October, the various claimants update their PCIs and submit Claimant Inputs including 5 major issues for each program sponsor and offsets required for program adds/increases.

NOTE: Although the Claimant Inputs are a separate submission from the Unified CINC Integrated Priority Lists (IPLs), issues submitted by NCCs, as their final input, should be consistent with the concerns expressed in the IPLs.

17. In October, the appraisals developed (Step 3) earlier are updated. The Summary Naval Warfare Appraisal Update and the ISR Update are presented to the PDRC and CEB. During this time, the DPSB also meets to provide planning and program guidance.

PLANNING PHASE



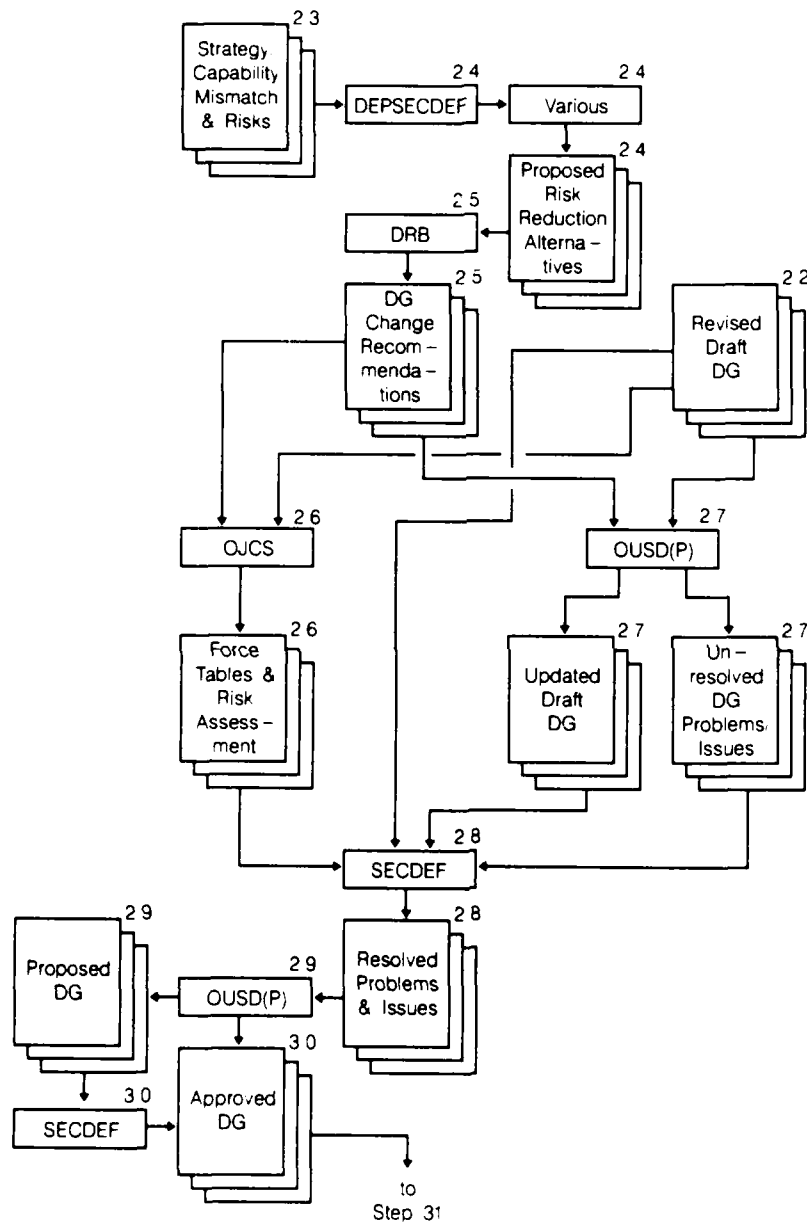
PLANNING PHASE (November 1987)

18. In November, based on the guidance provided by the DPSB, OP-90 develops and issues the Department of the Navy Consolidated Planning and Programming Guidance (DNCPPG) (see 3.3.3).
19. In November, the assessment sponsors issue their Baseline Assessment Memoranda (BAMs). The BAMs, based in part on the earlier "Heads-up" Reports (Step 6) and updated warfare appraisals (Step 17) include a recommended funding prioritization to balance deficiencies identified within the program(s) assessed (Step 6).

NOTE: BAMs are issued by the same OPs and for the same general headings as noted in Step 6 except that there are no BAMs developed for Research, Development and Acquisition (OP-098) and Naval Warfare (OP-095).

20. In early November, the draft Resource Planning Guidance and the Tentative Fiscal Guidance are forwarded to the OUSD(P). Based on these documents and the revised Policy Guidance section of the DG, the OUSD(P) prepares the draft DG.
21. In early November, the Draft DG is provided to the DOD Components, the CINCs, the NSC staff, the Department of State and the OMB for review and comment on the Resources and Tentative Fiscal Guidance sections of the draft DG.
22. By mid-November, the various comments are provided to the OUSD(P). Again, where possible, issues raised by the comments are resolved between the various staffs and the draft DG revised as necessary. Issues requiring DRB review and resolution are identified. At the same time, the OUSDRE and the OUSDA prepare briefings on the resources issues of the draft DG.
23. In late November, the DRB meets to review the revised draft DG, the various comments on the draft DG and to resolve the remaining issues on the draft DG. The DRB is also briefed on the resource implications and constraints of the revised draft DG. This review and briefing provide an early insight into areas of strategic capability mismatches and risks.

PLANNING PHASE



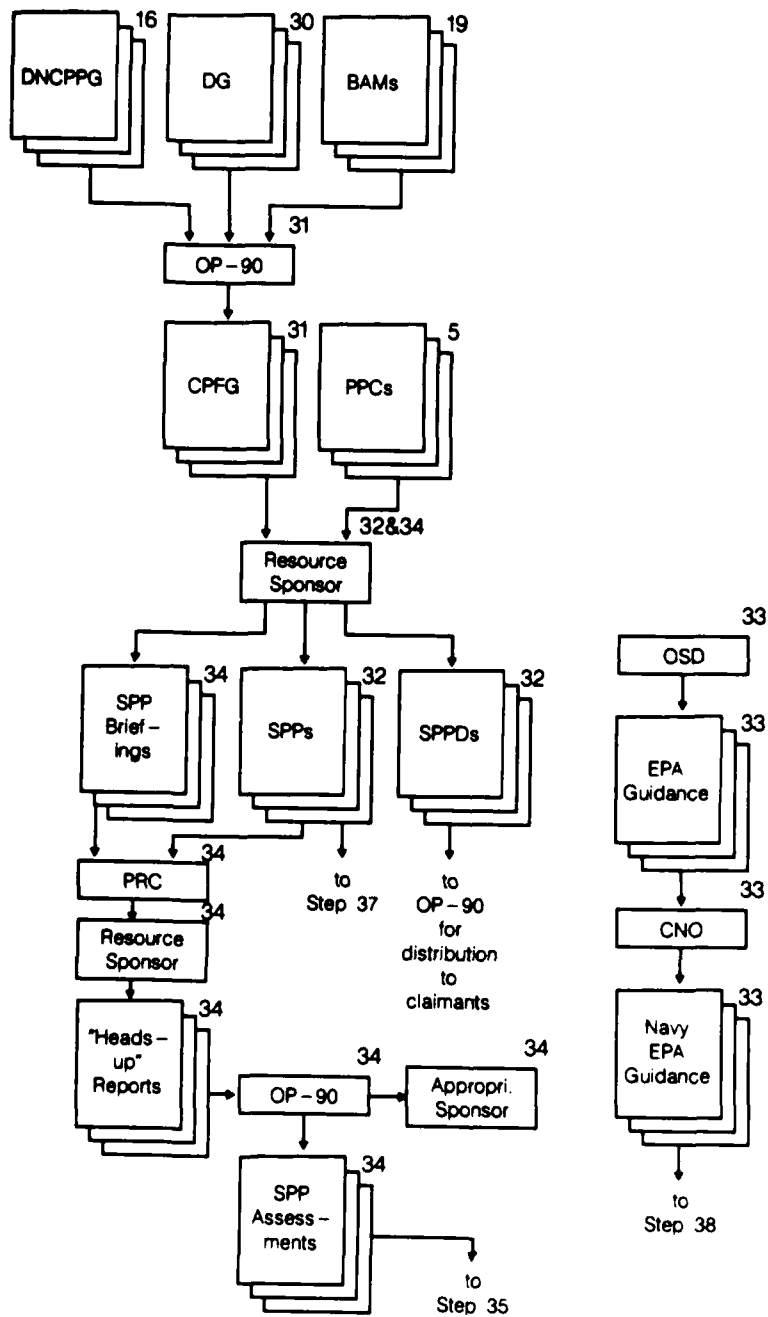
PLANNING PHASE (November 1987 to January 1988)

24. In late November/early December, as a result of the DRB review and briefing, the SECNAV and other service secretaries, OSD members and the JCS, working with the DRB members, are tasked, as necessary, by the Deputy SECDEF (DEPSECDEF), to develop proposed alternative solutions to reduce the identified risks.
25. In early December, these proposed solutions are presented to the DRB. As a result of this review, the DRB develops its recommendation for changes to the revised draft DG.

NOTE: In some cases, the DRB may recommend that the SECDEF request an increase in resources to reduce the mismatch and risks.

26. By mid-December, the OJCS, based on the revised draft DG and the DRB recommendations, prepares tables of expected major forces which it estimates will minimize the risks involved and an assessment of the risks associated with their ability to carry out the strategy contained in the DRB recommendations.
27. In mid-December, the DRB decisions on major issues that result in changes in guidance emphasis/force mixes, are reflected by the OUSD(P) in an updated draft DG. At this time, the OUSD(P) also prepares a list of any unresolved problems and/or issues.
28. At the end of December, the updated draft DG, the DRB recommendations as to mismatch and risks, the associated OJCS force tables and risk assessment and any unresolved problems and/or issue are reviewed and resolved by the SECDEF.
29. In early January, based on the updated draft DG and the SECDEF decisions, the OUSD(P) prepares the proposed DG.
30. In early January, the proposed DG is presented to the SECDEF for review and approval.

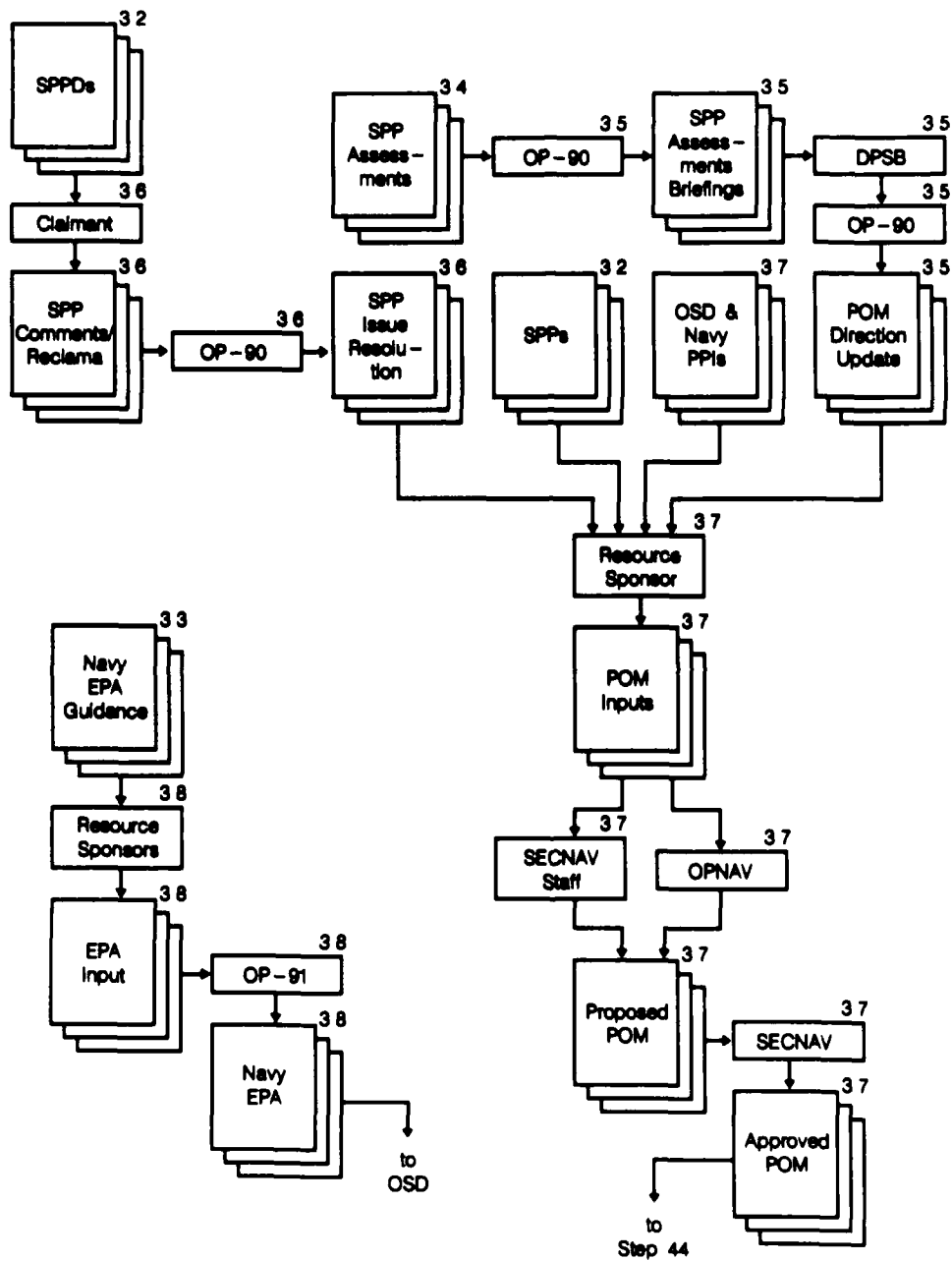
PROGRAMMING PHASE



PROGRAMMING PHASE (February and March 1988)

31. In February, based in part on the DG, the DNCPPG (Step 18) and the BAMs (Step 19), OP-90 develops and issues the Consolidated Program and Fiscal Guidance (CPFG) which provides the final programming guidance and fiscal controls to resource sponsors.
32. In March, the resource sponsors complete and submit their SPPs, based in part on the CPFG and the earlier submitted PPCs (Step 5). During the same month, the sponsors submit their SPP Decision Documents (SPPDs) containing a response to the top five issues from each claimant contained in the Claimant Input (Step 16). The SPPDs are submitted to OP-90 who forwards them to the claimants.
33. In March, OSD issues its guidance for the preparation of the Extended Planning Annex (EPA) (see 3.3.10.1). The EPA covers the POM years plus the ten years beyond. In turn, based on the OSD guidance, the CNO provides guidance to the resource sponsors for the Navy EPA preparation.
34. Late in March, the various resource sponsors provide detailed briefings to the PRC on their SPPs. After the PRC has been briefed, the assessment sponsors prepare and issue SPP program assessment "Heads-up" Reports which are forwarded to OP-90. In turn, OP-90 and appropriate sponsors meet to review the SPPs and "Heads-up" Reports and provide final written SPP assessments.

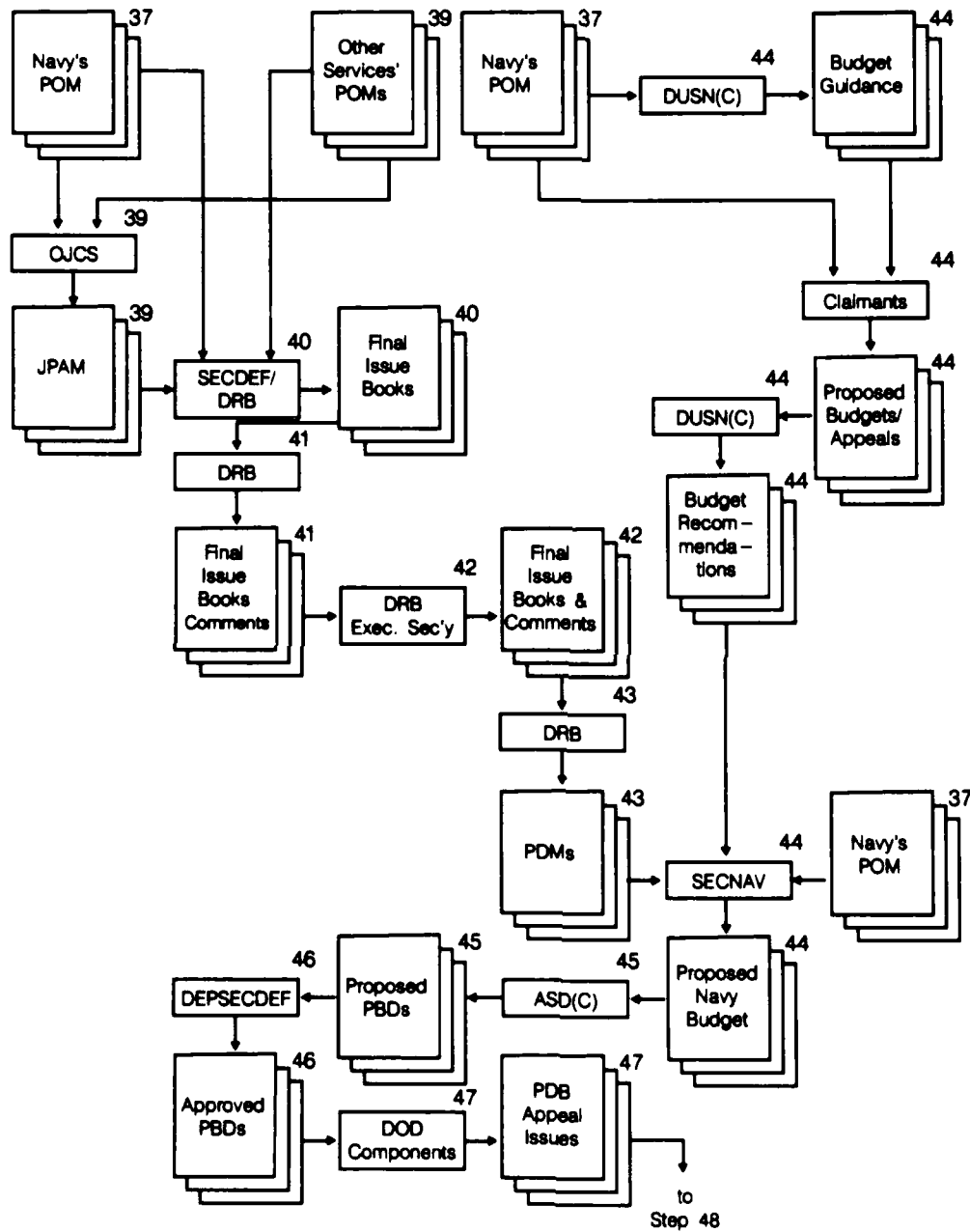
BUDGETING PHASE



PROGRAMMING PHASE (March to May 1988)

35. In March and April, based in part on the SPP Assessments, OP-90 briefs the DPSB on the status of the FY90 Program Objectives Memorandum (POM-90). Based on the direction provided by the DPSB, OP-90 issues any late direction for the POM-90 preparation.
36. In April, after review of the SPPDs (Step 32), the various claimants submit their SPP comments/reclama to OP-90. OP-90 resolves any final issues remaining.
37. In April and May the resource sponsors document their part of POM-90, based in part on the SPPs (Step 32 and in accordance with the POM Preparation Instructions (PPI) issued by OSD and OPNAV. The resource sponsors inputs are used by the SECNAV staff and OPNAV to prepare the Navy POM and submit it to the SECNAV for review and approval after which it is submitted to OSD.
38. In May, based on the EPA guidance (Step 33), the various resource sponsors provide their Navy EPA inputs to OP-91 who develops the Navy EPA and submits it to OSD.

PROGRAMMING/BUDGETING PHASE



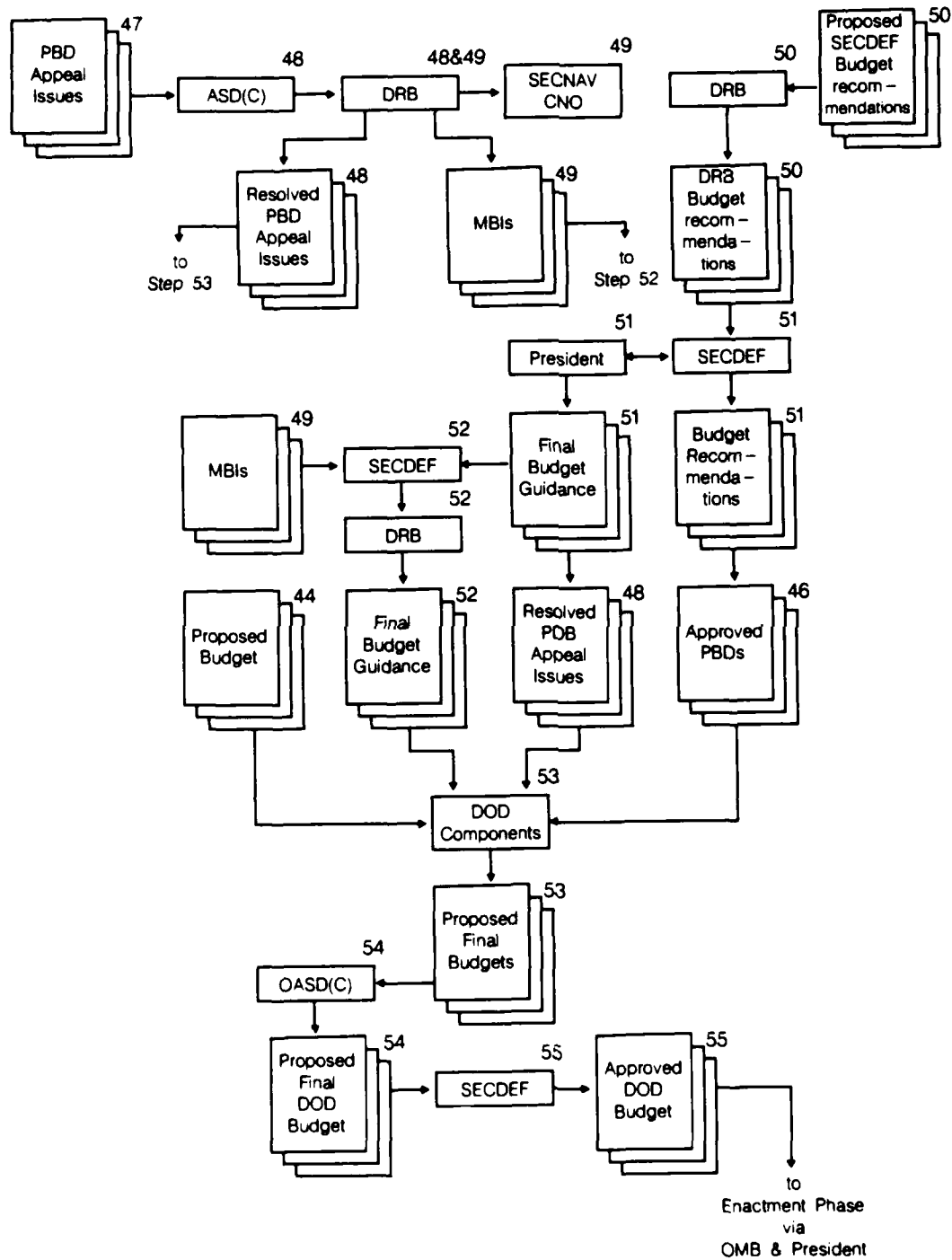
PROGRAMMING PHASE (May to July 1988)

39. In May, copies of the Navy POM and the POMs of the other DOD Components are provided to the SECDEF, the DRB members and the OJCS. Based on its review of the POMs, the OJCS prepares its Joint Program Assessment Memorandum (JPAM) (see 3.3.11).
40. In June, the JPAM is forwarded to the DRB members. The DRB members' staffs, after review of the POMs and the JPAM, identify any issues raised by this review. As many issues as possible are resolved between the DRB members' staffs and the DOD Components and the OJCS. Issues which cannot be resolved are documented as issue papers for insertion into the final issues book.
41. In June, copies of the final issues books are provided to the DRB members for review and brief executive-level comments.
42. In July, the DRB comments are provided to the DRB Executive Secretary for Assembly into issue books.
43. In July, the Issue books and comments are provided to the DRB for review. After review, the DRB determines its position on the POMs. These positions are recorded in a set of Program Decision Memoranda (PDM) (see 3.3.12), one PDM for each POM.

BUDGETING PHASE (June 1988 to November 1988)

44. In June and July, based on the Navy POM and guidance from the Deputy Under SECNAV (Comptroller) (DUSN(C)), the Navy claimants prepare and submit their proposed budgets to the DUSN(C). Based on these submittals and any late appeal, the DUSN(C) prepares his recommendations. The POM, PDM, proposed claimant budgets and the DUSN(C) recommendations and resultant SECNAV decisions form the basis for the Navy's budget.
45. In September, the proposed budgets of the DON and the other DOD Components are submitted to the Assistant Secretary of Defense (Comptroller) (ASD(C)). After review, the ASD(C) determines his positions on the proposed budgets. These positions are recorded in a set of proposed Program Budget Decisions (PBDs) (see 4.5.4), one for each submitted budget.
46. In October and November, the proposed PBDs are submitted to the DEPSECDEF for review and approval.
47. In October and November, copies of the PBDs are also supplied to the DON and other DOD Components. After review, the DON and other DOD Components prepare, for items they are in disagreement with, appeal issues.

BUDGETING PHASE



BUDGETING PHASE (November to December 1988)

48. In November, the DON and other DOD components' appeal issues are presented to the DRB for review and resolution.
49. In mid-December, the SECNAV and CNO, and the other DOD Components secretaries and service chiefs meet with the DRB to resolve major budget issues (MBIs) still outstanding and of sufficient importance to be brought directly to the attention of the SECDEF.
50. In early December, the DRB meets to review the SECDEF's proposed budget recommendations which he plans to present to the President. Based on that review, the DRB prepares its recommendations to the SECDEF.
51. In mid-December, the DRB's recommendations are submitted to the SECDEF. The SECDEF, in turn, makes his recommendations to the President who, after review, provides the SECDEF with his final budget guidance.
52. In mid-December, based on the approved PBDs, the DOD components' PBD appeals and MBIs resolutions and the President's final budget guidance provided to the SECDEF, the DRB meets to establish the final budget guidance for the DON and other DOD components, which is transmitted by the final PBDs.
53. In late December, the DON and other DOD components prepare their proposed final budgets based on the final budget guidance, their earlier submitted proposed budgets, the approved PBDs and their PBD appeal issue resolutions.
54. In late December, the DON and other DOD components' proposed final budgets are forwarded to the Office of the ASD(C) (OASD(C)) which combines them into a single proposed DOD budget.
55. In late December/early January, the proposed Final DOD Budget is submitted to the SECDEF for review and approval. The DOD budget is then forwarded to Office of Management and Budget (OMB) where it is incorporated into a single national budget, approved by the President and submitted to Congress in January for enactment.

SELECTED REFERENCES ON THE PROGRAMMING PROCESS

Department of the Navy Programming Manual is the primary source of information for Department of the Navy personnel for all aspects of the PPBS system. Its four chapters provide a broad overview of the PPBS process while its numerous appendixes and annexes contain detailed procedural guidance and reference information.

DODINST 7045.7, "Implementation of the Planning, Programming, and Budgeting System (PPBS)," establishes Navy responsibilities for processing and maintaining documents, records, and reports for the DOD programming system. DODINST 7045.7 establishes procedural guidance for processing changes to the FYDP, for review,

analysis, and approval of new programs, and for maintenance and updating of the program structure.

SECNAVINST 5000.16, "Department of the Navy Planning, Programming, and Budgeting System" establishes responsibilities of Navy organizations in FYDP-related processes.

POM-(FY)-1 (in 1985 POM 90-1), "Program Objective Memorandum Procedures for POM-(FY)" is the primary source for specific POM preparation information. It is a memorandum issued each year by the Director, Navy Program Planning (OP-090).

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The "Master Reference List" shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

CHAPTER 4 PREPARATION AND JUSTIFICATION OF THE BUDGET

TABLE OF CONTENTS

4.1	Place and Importance of Budgeting in the Management Process	4-1
4.2	Budgeting Terms and Concepts	4-1
4.3	Budgetary Structure	4-2
4.3.1	Appropriations	4-2
4.3.2	Budget Activities	4-2
4.3.3	Purpose of Appropriation Structure	4-2
4.4	The Budgetary Process	4-2
4.4.1	Concept of the "Balanced Program"	4-3
4.4.2	Incremental Programming Policy	4-3
4.4.3	"Justification"	4-3
4.4.4	Function and Source of Guidance	4-4
4.4.4.1	Procedural guidance	4-4
4.4.4.2	Substantive guidance	4-4
4.4.5	Congressional Budget and Impoundment Control Act of 1974 (PL93-344)	4-4
4.4.5.1	Current Services Budget	4-5
4.4.5.2	Concurrent resolutions	4-5
4.4.6	RDT&E Descriptive Summary (RDDS)	4-5
4.5	Supra-Navy Participants in the RDT&E Budgetary Process	4-5
4.5.1	Congress	4-5
4.5.2	The President	4-5
4.5.3	Office of Management and Budget (OMB)	4-6
4.5.4	Secretary of Defense (SECDEF)	4-6
4.6	Department of the Navy Participants in the RDT&E Budgetary Process	4-6
4.6.1	Secretary of the Navy (SECNAV)	4-6
4.6.2	Comptroller of the Navy (NAVCOMPT)	4-6
4.6.3	Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S))	4-6
4.6.4	Chief of Naval Operations (CNO)	4-6
4.6.4.1	Director Research, Development, and Acquisition (DRD&A) (OP-098)	4-7
4.6.4.2	Navy Program Planning Office (NPPO) (OP-090)	4-7

4.6.5	Commandant of the Marine Corps (CMC)	4-7
4.6.6	Chief of Naval Research (CNR)	4-7
4.7	Development and Justification of the Budget	4-8
4.8	Justification of the Budget before Congressional Committees	4-8
4.8.1	General Procedure	4-8
4.8.2	Guidelines for Witnesses before Congressional Committees	4-9
4.8.3	Preparation for Hearings	4-9
4.8.4	Conduct of Hearings	4-9
4.8.5	Review and Editing of the Transcript	4-10
4.8.6	Heartburns and Appeals	4-10
4.9	Late Appropriations	4-10

CHAPTER 4

PREPARATION AND JUSTIFICATION OF THE BUDGET

NOTICE — In response to Section 1405 of the FY 1986 DOD Authorization Act, DOD implemented the two-year budget recommended by the President's Blue Ribbon Commission on Defense Management (the Packard Commission). The 1988-1989 budget was submitted in that form.

This chapter covers the development, presentation, and justification of the budget, a process beginning more than 15 months before the start of the fiscal year and extending to passage of the Appropriation Act. (Steps 44 through 55 of Section 3.4 of the preceding chapter present the process for development of the DON budget from its initiation following approval of the POM through to submission of the President's Budget to the Congress in January.)

This chapter will discuss the RDT&E budgetary process in terms of its objectives and mechanisms, as well as the responsibilities of the various officials and agencies involved in developing it. The chronology of events in preparing and justifying the budget will be set down with this note of caution: no two years are ever exactly alike. The process of Congressional justification will then be covered.

4.1 PLACE AND IMPORTANCE OF BUDGETING IN THE MANAGEMENT PROCESS

Budgeting is definitely not a "technical accounting matter" concerned with "keeping the books." It is within the framework of the budget formulation process that programs must compete for approval and implementation. Just as plans are meaningless unless they win approval for inclusion in the Five-Year Defense Program (FYDP), programs must win inclusion in the budget. In this continuous process, plans are translated into programs and programs are incorporated into budgets on a selected basis.

Appearance of a program in the FYDP is not an automatic guarantee that it will be funded. The budget is constrained historically by estimated national dollar resources irrespective of the Total Obligational Authority (TOA), approved for the budget year in the FYDP. Since the magnitude of resources allocated to defense in any given year is usually less than the total of the programs approved in the FYDP, certain programs may be reduced or deleted when the budget is actually formulated. Programs may be reduced or deleted to reduce the overall Defense or Federal budget, provide for other programs of higher priority, or offset increased costs of other programs in the budget.

After approval, the budget becomes the actual framework for day-to-day management. The First Hoover Commission emphasized this fact in 1949 when it stated: "The budget and appropriation process is the heart of management and control of the executive branch."

4.2 BUDGETING TERMS AND CONCEPTS

Knowledge of the following terms and concepts is essential for an understanding of this chapter and the process it portrays.

Mark-up—the process of modifying budget submission; reducing, increasing, revising or eliminating items; and providing appropriate guidance resulting from the review process.

Reclama—A request for restoration of all or part of a reduction in a budget estimate made by a higher review level.

Appeal—Alternative term for reclama. The term appeal is used in communications with congressional committees.

Appropriation—an annual act of Congress making budget authority available for specified purposes and to make payments out of the Treasury. Appropriations vary in the length of time the funds remain available for obligation. Annual appropriations are available for only twelve months; multiyear appropriations for a definite period of two or more years; continuing or "no-year" appropriations are available until expended. The RDT&E,N appropriation is available for obligation for only 24 months.

Appropriation Manager—the official responsible to the Secretary of the Navy for formulation, presentation, and execution of a budget/appropriation. The Assistant Secretary of the Navy (Research, Engineering, and Systems) is appropriation manager for RDT&E,N.

Project Listing—A computer based display of the entire DON RDT&E Program by program elements, budget projects, and associated dollars. It is used to back up budget submissions to NAVCOMPT, OSD, OMB, and the Congress; and for POM submissions and apportionment requests.

DODINST 7045.7; DON Programming Manual, Annex 4, Part B

4.3 BUDGETARY STRUCTURE

DON Programming Manual, Annex 3

4.3.1 Appropriations. Congress appropriates Defense funds for a given fiscal year in an Appropriation Act whose principal subdivisions are

- Title I Military Personnel
- Title II Retired Military Personnel
- Title III Operation and Maintenance

Title IV : Procurement

Title V : Research, Development, Test,
and Evaluation (RDT&E)

Title VI : Special Foreign Currency Program

Title VII : General Provisions.

4.3.2 Budget Activities. The Congressional Budget and Impoundment Control Act of 1974 (see 4.4.5) requires that the budget submissions contain a presentation in terms of "a detailed structure of national needs." Accordingly, a mission-oriented budget structure has supplanted the hardware-oriented budget activity structure into which the RDT&E,N appropriation was previously classified. RDT&E budgets are now divided for Congressional presentation into the following budget activities:

- 1 Technology Base
- 2 Advanced Technology Development
- 3 Strategic Programs
- 4 Tactical Programs
- 5 Intelligence and Communications
- 6 Defense-wide Mission Support.

DON Budget Guidance Manual (NAVCOMPT 7102.2)

4.3.3 Purpose of Appropriation Structure. The appropriation structure is intended to offer the Congress a convenient means of correlating the RDT&E appropriation with various procurement appropriations. The current structure also readily identifies the dollars relating to the major missions of the Navy. The budget presents the Congress with line items, at the program element level, comprising the programs for the ensuing or budget year.

4.4 THE BUDGETARY PROCESS

The program in the FYDP is revised to reflect fiscal constraints, changes in threat assess-

ment, Congressional actions, etc., and in its approved form reflects the decisions of SECDEF. The revised program is then converted to the appropriation structure for the four-year period to be presented in the budget and is supported by detailed shopping lists of items and dollars. The budget plan is expressed in dollar terms. Such things as production schedules, prices, leadtime, activity rates, personnel grade structure, training requirements, etc., are required to reflect the program proposed for inclusion in the budget.

The budget formulation process involves successive reviews and decision points. As each succeeding review considers a broader context, many items proposed for approval are reduced or eliminated. Though it is possible to criticize this process on the grounds of time and talent required, it does serve essential purposes. The objective of the process is a budget which provides the best possible military worth and program balance within the limits of anticipated resources.

DODINST 7045.7

Directives listed following the introduction to a section generally apply to all the following information in the section and are not repeated.

4.4.1 Concept of the "Balanced Program." A budget which provides the maximum value output for a given level of expenditure implies a condition of balance in which all responsibilities are met more or less equally and in which no item is included which is less essential than any item not included. In order to approach this ideal, alternatives must be weighed and different items competing for inclusion in the budget, compared. In order to provide a range of choice, more items are considered initially than can be included in the approved list submitted to higher echelons.

• Lower level activities submit to higher echelons a list of requirements which must be approved. The higher organization approves or disapproves submissions from its activities and approves or disapproves submissions from these

activities and bring the entire list into balance by eliminating or reducing items considered to be marginal. This process at all levels of review is designed to develop a close approximation of a balanced program for submission to the next higher echelon where the process is repeated as balance is sought in a broader context. The process continues to the Congressional level where the Congress must balance defense needs against other national needs.

4.4.2 Incremental Programming Policy. The incremental programming policy provides that only those funds required for work in a given fiscal year are included in the authorization request for that fiscal year for most classes of Research, Development, Test, and Evaluation.

It has been Department of the Navy policy for many years to program and fund RDT&E effort on an **annual incremental** basis as opposed to the **fully funded** program basis of the procurement appropriation.

NAVCOMPT Manual, Vol. 7, Part F, Chapter 074500, "Research, Development, Test and Evaluation, Navy."

4.4.3 "Justification." Justification is closely related to the process described in the previous paragraph. Each item in the estimates submitted by any organization to the next higher echelon must be supported by written justification. This justification process serves both to support the inclusion of any given item in the program and to indoctrinate higher level officials in the details of the contents of the estimates they will in turn submit to higher echelons, and be called on to justify.

Budget justification is designed to demonstrate that the proposed estimate is:

- Within the framework of the law and approved administrative guidelines
- Essential to the effective performance of the mission assigned

- The most economical and effective method of accomplishing its purpose
- Feasible with respect to timing and the availability of resources.

The "appeal" is closely related to budget justification and mark-up. It plays a vital role in the process of approaching the impossible goal of a more nearly "perfectly balanced program." The appeal is the request for restoration of any item deleted from a budget submission by a higher level organization in its mark-up. In general, successful appeal requires improved justification. The appeal process makes it possible to save worthwhile programs which were eliminated because of inadequate justification. Each review echelon issues instructions for appeal as appropriate.

4.4.4 Function and Source of Guidance. "Guidance" plays an important part in the budget preparation process. Guidance is both substantive and procedural.

4.4.4.1 Procedural guidance. Uniformity, always a goal of accounting practice, is essential if ADP equipment is to be able to summarize submissions from diverse organizations. One of the duties assigned the Comptroller of the Department of Defense when the office was called for by Title IV of the Department of Defense Reorganization Act of 1949 was the establishment of "uniform terminologies, classifications, and procedures" for use in all budgeting and accounting matters.

For the most part, the means by which budget estimates are presented is directed by higher authority. **Justification material** is required by the Office of Management and Budget (OMB) and is used to support budget estimates at each review level.

Budget Schedules and narrative are required by OMB as a basis for preparation of the Appendix to the printed Federal budget. **Backup Material** is required by ASD(COMPT) as he prescribes. **Annex Material** is required by NAVCOMPT upon call concurrent with his review. **Budget Summary Table** feeder data are required by NAVCOMPT for consolidation, pub-

lishing, and use of Navy witnesses before Congress. The Office of Naval Research in carrying out comptrollership responsibilities as assigned by ASN(R,E&S) issues procedural guidance for submission of budgetary data for RDT&E to cognizant commands and offices.

DON Budget Guidance Manual (NAVCOMPT 7102.2)

4.4.4.2 Substantive guidance. Annually, the Secretary of Defense issues Defense Guidance, including fiscal guidance, to define the total financial constraints within which the DOD force structure will be developed and reviewed. Broad guidance from higher levels is translated into increasingly specific guidelines at lower levels. Another source of guidance is the expressed and implied intent of the Congress as stated in previous hearings on the authorization and appropriation requests and in reports accompanying the bills reported out by the various committees for prior-year and current-year budgets.

DODINST 7045.7

4.4.5 Congressional Budget and Impoundment Control Act of 1974 (PL93-344). PL93-344 made extensive and important changes in the Federal Budget process. These include: (1) moved the start of the fiscal year from 1 July to 1 October; (2) created a Budget Committee in each House; (3) created the Congressional Budget Office; (4) required estimates of the President's budget for the budget year plus four additional years; (5) provided for "year ahead" authorization requests; (6) established a requirement for two Congressional concurrent resolutions; and (7) established the principle of the "Current Services" budget to be submitted by the President in advance of the annual request for new budget authority. In addition, the Act states

The Budget shall contain a presentation of budget authority, proposed budget authority, outlays, proposed outlays, and descriptive information in terms of: (1) A detailed struc-

ture of national needs which shall be used to reference all agency missions and programs; 2) Agency missions; and 3) Basic programs.

To the extent practicable, each agency shall furnish information ... in support of its budget requests in accordance with its assigned missions in terms of Federal functions and sub-functions, including mission responsibilities of component organizations, and shall relate its programs to agency missions.

4.4.5.1 Current Services Budget. The Current Services Budget is submitted by the President to the Congress by 10 November. It presents the estimated outlays and proposed budget authority which would be required if all programs and activities were carried on during the ensuing year at the same level as the current year, without policy changes or new programs and activities.

4.4.5.2 Concurrent resolutions. The first of the concurrent resolutions, due on 15 May, establishes target amounts for the major functional categories; e.g., *Defense, General Science, International Affairs*, on the basis of which the authorizing and appropriating legislation is worked out. The second concurrent resolution, due on 15 September, is adopted to resolve any discrepancies between the first concurrent resolution and the legislation as passed. If necessary, it may be followed by reconciling legislation.

4.4.6 RDT&E Descriptive Summary (RDDS). The RDDS provides concise justification for each RDT&E program element. Each RDDS is to be a "stand alone" document covering purpose, structure, and activities to be funded.

Originally strictly a budget back-up document for Congress, the RDDS now supports the POM, the DON budget, and the President's budget. Individual RDDS are prepared by the program manager and submitted through the chain of command for collation into the overall RDDS document.

DON Budget Guidance Manual (NAVCOMPT 7102.2); amplifying instructions promulgated by OP-098 for each budget cycle.

4.5 SUPRA-NAVY PARTICIPANTS IN THE RDT&E BUDGETARY PROCESS

4.5.1 Congress. Article I of the United States Constitution assigns to the Congress the responsibility to "provide for the common defense" and to "provide and maintain a Navy." Section 9, Clause 7 of this Article further provides that "no money shall be drawn from the Treasury, but in consequence of appropriations made by law." In carrying out these responsibilities, Congress takes a detailed interest in the content of military programs and their costs. Budget estimates are considered by both the Armed Services Committees and the Appropriations Committees of both the House of Representatives and the Senate, which hold formal hearings with OSD and Service representatives. The Armed Services Committees are responsible for authorizing legislation to permit appropriations to be made; the Appropriations Committees are responsible for appropriation of funds. Full Congressional action is required to obtain an increase in authorization for a particular fiscal year once the authorization has been enacted.

The Budget Committees of the House and Senate, created by the Congressional Budget and Impoundment Control Act of 1974 (see 4.4.5), receive information from the standing committees of their respective Houses, including the Armed Services and Appropriations Committees, regarding required budget outlays and other fiscal matters falling within the jurisdiction of each. On the basis of this information they draft and report to their Houses the concurrent resolutions required by the Act. The Budget Committees are assisted in this process by the Congressional Budget Office (CBO), also established by the Act. The CBO is authorized by the Act to request (and receive) necessary information both from Congressional committees and from the Executive Branch.

4.5.2 The President. The President has responsibility for presenting an Executive Budget to Congress. The President, through the OMB, reviews, revises, and approves the estimates of all departments and agencies. When consolidated, these estimates become a complete government-wide financial plan for the following fiscal year. The President assumes official responsibility for

4.5.3

the integrity and validity of the estimates contained in the Executive Budget. By law (Budget and Accounting Act of 1921), no official of an executive department or agency may take any action or volunteer any opinion that is contrary to official budget policies as expressed by the President in his budget, except through proper official channels (see paragraph 4.8.2 on obligations of executive department officials in relation to the President's budget).

4.5.3 Office of Management and Budget (OMB). The OMB assists the President in the preparation of the budget and the formulation of the fiscal program of the Government. It also supervises and controls the administration of the budget.

United States Government Organization Manual

4.5.4 Secretary of Defense (SECDEF). The Secretary of Defense participates actively in the budgetary process. Either the Secretary or his deputy issues all Program Budget Decisions (PBDs) reflecting major decisions on the budget. SECDEF also plays a major role in the justification of the budget before Congressional committees. (For additional information on the Secretary of Defense, see 1.2.1.)

SECDEF is assisted in carrying out budgetary responsibilities by various officials and organizations discussed in Appendix E. They include: USDRE (see E1.1), ASD (Comptroller) (see E1.4), DPAE (see E1.6), and the Defense Resources Board (see E9.6).

4.6 DEPARTMENT OF THE NAVY PARTICIPANTS IN THE RDT&E BUDGETARY PROCESS

This section discusses responsibilities of the Secretary of the Navy and various officials and groups who exert major influence on the development and justification of the Navy RDT&E budget submissions.

SECNAVINST 5430.67

4.6.1 Secretary of the Navy (SECNAV). The Secretary of the Navy is responsible for preparing the Navy Budget and submitting it to the Secretary of Defense, OMB, and Congress. The Secretary of the Navy is assisted in discharging these responsibilities by the officials and organizations discussed in the following paragraphs.

4.6.2 Comptroller of the Navy (NAVCOMPT). Under the Secretary of Navy, and subject to the general policies of the ASD Comptroller, the Comptroller of the Navy develops and establishes the basic fiscal policies of the Department of the Navy. The Comptroller of the Navy formulates principles and policies and prescribes procedures in the areas of budget preparation and administration; financial management and accounting, audit, disbursing, and reporting.

NAVCOMPT provides staff services to the Secretary for the translation of policies, plans, and programs of the Navy and Marine Corps into a formal budget for presentation to the Secretary of Defense, the OMB, and the Congress. This office issues guidance to the commands and offices on the form and content for submission of budget estimates and supporting data and on the availability of funds and the purposes for which funds may be spent. This guidance is binding.

4.6.3 Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S)). ASN(R,E&S) (see 1.4.2) is responsible for management of the appropriation "Research, Development, Test and Evaluation, Navy" in addition to responsibility for department-wide policy supervision of all RDT&E within the Department of the Navy. In carrying out these responsibilities, ASN(R,E&S) is assisted by the Chief of Naval Research, Director RD&A, the Oceanographer of the Navy, and the Deputy Chief of Staff, Marine Corps, for Research, Development, and Studies.

4.6.4 Chief of Naval Operations (CNO). The Chief of Naval Operations (see 1.4.5 and E3) is responsible for determining and planning the material support needs of the Operating Forces of the Navy (less Fleet Marine Forces and other assigned Marine Corps forces).

The CNO is responsible for the overall coordination, content, and priorities of the program the budget is designed to support, and thus, has a vital interest in the process of the development and defense of the budget. The CEB (CNO Executive Board) (see E9.5) assists the CNO in the administration of his budget program responsibilities.

4.6.4.1 Director Research, Development, and Acquisition (DRD&A) (OP-098). The Director RD&A (see E3.11) plays a dual role in preparing the RDT&E program/budget estimates for the Department of the Navy. The Director coordinates the programs for Advanced Development, Engineering Development, Operational Systems Development, and Management and Support for the ASN(R,E&S) in the same manner that the Chief of Naval Research (CNR) coordinates Naval Research and Exploratory Development.

In addition, the Director RD&A provides the staff assistance to ASN(R,E&S) to assemble, integrate, and coordinate the Department of the Navy program and project listings of the Navy and Marine Corps RDT&E Program. In carrying out this function, the Director collaborates with the Commandant of the Marine Corps and the CNR.

The Director RD&A, acting as staff for ASN(R,E&S), prepares RDT&E program guidance for use by the Naval Medical R&D Command, the Office of the Chief of Naval Research, and the Commandant of the Marine Corps. The Director RD&A staff reviews for program content the narrative justification consolidated by OCNR and coordinates the presentation of the RDT&E,N program to USDRE, the ASD(Comptroller), and the Office of Management and Budget. The Director RD&A also participates in the preparation of appeal actions resulting from the budget mark-ups by NAVCOMPT, SECNAV, OSD, and Congressional committees. The ASN(R,E&S), Director RD&A, and CNR are the principal witnesses before Congressional committees in justifying the RDT&E,N program. In addition, the Director RD&A coordinates for ASN(R,E&S) all justification for Congressional committees.

4.6.4.2 Navy Program Planning Office (NPPO) (OP-090). The Navy Program Planning Office (see E3.7) is responsible for the integration of "planning, programming, budgeting, and appraising" within the Office of the Chief of Naval Operations. This Office supports the CNO by reviewing programs and financial and manpower decisions to evaluate their impact on the total Navy program and then recommends adjustments as necessary to restore balance. NPPO is the primary point of contact within OPNAV for program and budgetary matters.

4.6.5 Commandant of the Marine Corps (CMC). Assisted by the Deputy Chief of Staff (RD&S), the CMC assembles, integrates, and coordinates the Marine Corps' annual RDT&E program for submission to ASN(R,E&S) and CNO for inclusion in the Department of the Navy program and project listings of the Navy and Marine Corps RDT&E Programs (see E6).

4.6.6 Chief of Naval Research (CNR). CNR (see 1.4.4 and E7) heads the Office of the Chief of Naval Research (OCNR). He coordinates the DON Research and Exploratory Development Programs and is responsible to ASN(R,E&S) for preparation of justification in support of those programs. He also provides budgeting, accounting, and related reporting services for the ASN(R,E&S) required for his management and control of the RDT&E appropriation and the related staff services required by the Director RD&A to fulfill their responsibilities in the integration and coordination of the RDT&E program.

The OCNR comptroller prescribes budget policies and procedures for the RDT&E program. In addition to providing guidance and issuing instructions to the commands and offices for preparation of the budget in support of the approved program, he also coordinates the preparation of the budget estimates for submission, after review and approval by ASN(R,E&S), to the Secretary of the Navy, OSD, OMB, and Congress.

The OCNR comptroller is assigned collateral duty as Special Assistant to the ASN(R,E&S) for

Financial Management. He provides technical guidance and direction in financial matters in support of the planning and programming responsibilities of the ASN(R,E&S), Director RD&A, CNO, and CNR.

The OCNR comptroller consolidates the program project listings for the Department of the Navy RDT&E program but does not perform the program evaluation required to reduce the program as required by fiscal availabilities, or to establish balance. The program evaluation for ASN(R,E&S) is performed by the Director RD&A with the advice and assistance of CMC and CNR.

SECNAVINSTS 5430.20, 5430.55

4.7 DEVELOPMENT AND JUSTIFICATION OF THE BUDGET

The budgetary process may change in some of its details from time to time, but the significant steps in developing the RDT&E budget for FY 19XX are depicted in the PPBS process chart in Chapter 3, particularly steps 44 through 55.

4.8 JUSTIFICATION OF THE BUDGET BEFORE CONGRESSIONAL COMMITTEES

DODDIR 5400.4 (SECNAV 5730.5); NAVCOMPINST 7121.3; Navy Witness Guide (NAVSO-3036)

4.8.1 General Procedure. Following the President's Budget Message, the DOD budget estimates are sent to the Senate and House Armed Services and Appropriations Committees for review. Congressional review of the Defense portion of the President's budget is undertaken from the separate standpoints of authorization of programs and appropriation of funds. Authorizing legislation is prepared by the Senate and House Armed Services Committees, and appropriations legislation by the Defense Subcommittees of the Senate and House Appropriations Committees. Thus, the Congressional review process involves hearings before those four committees and their appropriate subcom-

mittees. The role of the Budget Committees established by the Congressional Budget and Impoundment Control Act of 1974 (see 4.4.5) is primarily with regard to fiscal constraints. However, during the budget process the Budget Committees receive testimony, mostly of a broadly informative nature, both from the Service Chiefs and at the staff level; and the Congressional Budget Office calls for staff briefings of a more detailed nature on Defense programs.

For the RDT&E appropriation, the same backup material is submitted to the four committees. This includes the justification book containing the R&D Descriptive Summaries (RDDS) (see 4.4.6) that give the full details on all program elements and projects. Program element listings, comprising the programs for the past, current, budget, and authorization years, are included in the justification book.

Using this material as a basis for evaluation and questioning, the committees hold formal hearings to establish for the record the position of the Services on major issues.

Initial hearings on the RDT&E authorization are held by the R&D Subcommittee of the House Armed Services Committee. The recommendations of the full committee are acted upon by the full House. The Senate Armed Services Committee conducts its hearings almost in parallel and the full committee reports recommendations on the Authorization Bill as passed by the House. Where there are differences between the bills passed by each body, the two committees meet in conference and arrive at an agreed joint position that is submitted to the two Houses for approval and enactment. The authorization as enacted establishes the maximum amount that may be appropriated by the Congress.

The procedure on the appropriation is somewhat similar in that the House Appropriations Committee generally acts first. The Defense Subcommittee holds hearings, and the full committee recommends an appropriation bill to the House. The Defense Subcommittee of the Senate Appropriations Committee holds hearings in parallel and recommends appropriate changes to the appropriations bill as passed by the House.

Where there are differences between the Senate bill and the House bill, a conference meeting is held between designated representatives of each body, and a jointly agreed position is reported out. Upon approval by both bodies and signature by the President, it becomes law.

4.8.2 Guidelines for Witnesses before Congressional Committees. When a witness appears before a Congressional committee to testify concerning the budget, he is there as a member of the executive branch supporting the "President's budget."

It is expected that witnesses will carefully avoid volunteering views differing from the budget, either on or off the record. While direct questions at hearings must be answered frankly, a witness who feels that he must set forth a personal view inconsistent with the President's budget will also point out that the President's judgment on the matter was reached from his overall perspective as the head of the Government and in the light of overriding national policy. The witness should make clear that his personal comments are not to be construed as a request for additional funds.

Title 31 U.S. Code 15 has the following to say on the relationship between an executive department witness and the President's budget:

No estimate or request for an appropriation and no request for an increase in any item of any such estimate or request, and no recommendation as to how the revenue needs of the Government should be met, shall be submitted to Congress or any committee thereof by an officer or employee of any department or establishment, unless at the request of either House of Congress.

It is imperative that witnesses appearing before committees of the Congress be thoroughly familiar with the above provisions in order that all testimony will meet the basic requirement of supporting the President's budget.

4.8.3 Preparation for Hearings. Every attempt is made to be prepared for hearings so that all questions of members may be answered with a minimum number of witnesses. The attempt to

hold down the number of witnesses requires more extensive preparation for the few witnesses who provide the main testimony.

Through preliminary liaison with committee staff, conducted through NAVCOMPT for the appropriations committees, and through the Office of Legislative Affairs for all other committees, particular areas of probable interest and the probable duration of hearings are determined. Sometimes the trend of questioning of other Services will indicate a need for special preparation in certain areas. Press and magazine stories may generate spontaneous questions which can be anticipated and thus prepared for in advance. Thorough review of previous years' testimony is mandatory.

Principal witnesses submit a prepared statement in advance of testimony. These statements are carefully reviewed within the Navy and OSD before submission to the committee 48 hours in advance of scheduled hearings.

4.8.4 Conduct of Hearings. At the authorization hearings, the Secretary of Defense and members of the Joint Chiefs of Staff testify on the overall program. These are also known as the "Posture Hearings." The USDRE is the principal witness in support of the RDT&E program of the Department of Defense before both the authorization and the appropriation committees. The Secretary of Defense also testifies at the appropriation hearings.

The ASN(R,E&S) is the principal witness in support of the Department of the Navy RDT&E program and appropriation requests before both the authorization and appropriation committees. He is supported by a limited number of his top advisors such as the Director RD&A, CNR, and DC/S(RD&S) of the Marine Corps.

There is no rigid custom for the conduct of hearings. The committee chairmen may vary the procedure to suit time and interest. Most frequently, the principal witness provides a brief statement and answers questions, and submits a detailed statement for the record. Visual aids may be used to augment prepared statements.

Hearings on the RDT&E appropriation are almost invariably in executive session owing to

the security classification of the matters discussed. If the witness is discussing a particularly sensitive matter, he may request that it not be recorded, i.e., "off-the-record."

In spite of diligent preparation, occasions occur when the witness will not be able to provide requested information. He may request permission to "provide it for the record."

4.8.5 Review and Editing of the Transcript. The Congressional committees give witnesses an opportunity to review and correct the transcript of their testimony. Witnesses are permitted to correct grammar and other obvious errors provided the substance of the testimony is not altered. Material to be provided "for the record" is added at this time. Classified portions of testimony are bracketed and do not appear in the printed copy. Similar treatment is given to questions asked by Congressmen which contain classified information.

Normally only one or two working days are allowed the Services for review of the record. The Director RD&A coordinates this function for the RDT&E appropriation.

4.8.6 Heartburns and Appeals. "Heartburns" and "appeals" reclama committee language or

recommended program funding. (See "reclama" and "appeal" in 4.2.) "Heartburns" are those appeals of overriding importance.

Heartburns and appeals are submitted to the Authorization and Appropriation Committees in response to their respective actions on the Department's budget request. They must be in clear, concise, nontechnical language, understandable by readers not familiar with the technology of the program.

DON Budget Guidance Manual (NAVCOMPT 7102.2)

4.9 LATE APPROPRIATIONS

In those instances when an appropriation has not been passed before the beginning of a fiscal year, the Congress normally passes a "continuing resolution" which permits agencies to spend at the lesser rate of (1) that achieved in the previous year or (2) that reflected in a prior action of Congress. During the period of operation under the continuing resolution, new starts, program buildup, etc. are generally not permitted.

SELECTED REFERENCES ON PREPARATION AND JUSTIFICATION OF THE BUDGET

OMB Circular No. A-11, "Instructions for the Preparation and Submission of Annual Budget Estimates," states the general rules for submission of budgets. It is revised on a continuous basis.

SECNAVINST 5430.67, "Assignment of Responsibilities for Research, Development, Test, and Evaluation," assigns specific duties and responsibilities to the CNO, CMC, and CNR in the implementation of the Department-wide responsibilities of the ASN(R,E&S)

DON Budget Guidance Manual (NAVCOMPT 7102.2) provides guidance for the preparation, submission, and review of the budget estimates submitted to NAVCOMPT, OSD, OMB, and the Congress. Copies of this manual are provided to

all budget submitting offices, Appropriation and Resource Sponsors, and other selected staff offices.

NAVCOMPTINST 7121.3, "Department of the Navy Annual Budget Hearings Before the Congressional Appropriations Committees; information for witnesses." In addition to useful information for witnesses, it also provides procedures for review of hearing transcripts prior to release. Every witness testifying in support of the budget should be familiar with this instruction.

Navy Witness Guide (NAVSO-3036). This guide, updated annually by the DON Office of Legislative Affairs, is must reading for anyone testifying to Congress.

CHAPTER 5 EXECUTION OF THE RDT&E BUDGET

TABLE OF CONTENTS

5.1 Responses to the Appropriations Act	5-1
5.1.1 Apportionment	5-1
5.1.1.1 Apportionment defined	5-1
5.1.1.2 Apportionment Request	5-1
5.1.2 Documentation of RDT&E,N Apportionment	5-2
5.1.2.1 Apportionment and/or Reapportionment Schedule (DD Form 1105)	5-2
5.1.2.2 RDT&E Program/Fund Authorization (SD Form 440)	5-2
5.1.2.3 Budget Activity Allocations (NAVCOMPT Form 2058)	5-2
5.1.3 Operating Budget Allocations by ASN(R,E&S)	5-2
5.1.4 Action on General Provisions	5-2
5.1.5 Administration of Deferrals	5-2
5.2 Obligation and Expenditure of Funds	5-3
5.3 Accounting for Research and Development	5-3
5.3.1 Objectives of R&D Accounting	5-3
5.3.2 Harmonizing Programming, Budgeting, and Accounting	5-4
5.3.3 Identification of RDT&E Costs	5-4
5.3.3.1 Expenses vs investments	5-4
5.3.3.2 Research and development cost definitions	5-4
5.3.4 Distribution of Costs to Benefiting R&D Projects	5-4
5.3.4.1 Navy Industrial Fund (NIF)	5-4
5.3.4.2 Operating budgets	5-4
5.3.5 Accounting for Accrued Expenditures	5-5
5.4 Program Management Proposal (PMP)	5-5

5.5 Reprogramming	5-5
5.5.1 Reprogramming Procedures	5-6
5.5.2 Reprogramming Hearings	5-7
5.5.3 Reprogramming Reports	5-7
5.6 Audits and Review	5-7
5.6.1 General Accounting Office (GAO)	5-7
5.6.2 Navy Audit Program	5-7

CHAPTER 5

EXECUTION OF THE RDT&E BUDGET

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

One might assume that passage of the Appropriations Act, after more than a year and a half of justification, review, mark-up, and appeal, would mark the end of the battle for the funds required to carry out the Navy's RDT&E program. Such is not the case for RDT&E or any other appropriation. The process continues within the Navy, as well as with OSD, the OMB, and the Congress, until funds are approved, released, and obligated, since changing needs and technology affect the relative value and priority of various programs and projects. Even after the money has been spent, the process continues, in a sense, through audit. These matters are covered in this chapter.

5.1 RESPONSES TO THE APPROPRIATIONS ACT

When the Appropriations Act is passed, actions must be taken to make the funds available to the organizations that carry out the Department of the Navy RDT&E Program. Measures must also be taken to respond to Congressional guidance contained in the Authorization and Appropriations Acts and in committee reports.

5.1.1 Apportionment. Funds must be apportioned before they are actually available for obligation and expenditure. The apportionment process in the Federal Government dates back almost 100 years. As originally enacted, it required that expenditures be spread in an orderly

manner throughout the year so as not to precipitate the need for deficiency appropriations.

DODDIRS 7110.1, 7200.1

5.1.1.1 Apportionment defined. Apportionment is defined as:

A determination by the Director, Office of Management and Budget as to the amount of obligations which may be incurred during a specified period under an appropriation, contract authorization, other statutory authorizations, or a combination thereof, pursuant to Section 3679 of the Revised Statutes as amended (31 U.S.C. 665). An apportionment may relate either to all obligations to be incurred during the specified period within an appropriation account or to obligations to be incurred for an activity, function, project, object, or combination thereof.

5.1.1.2 Apportionment Request. The apportionment schedule, DD Form 1105, is submitted by NAVCOMPT to the ASD(Comptroller) within three days after passage of the Appropriations Act. The DD Form 1105 must be submitted to OMB within 15 days after passage of the Appropriations Act.

Upon receipt of the approved apportionment, and taking into account the recommendations of

OSD and ASN(R,E&S), NAVCOMPT allocates the RDT&E,N appropriation to ASN(R,E&S). ASN(R,E&S) then makes suballocations to the RDT&E,N Administering Offices.

It must be emphasized that the "program" recommendations are generally made by USDRE and approved by the Secretary of Defense. The ASN(Comptroller) is also involved in these recommendations, particularly where financial or cost/effectiveness considerations are factors. OMB makes an indirect review of decisions. The results of OMB decisions become apparent by action on the Apportionment Schedule, DD Form 1105, submitted to OMB by OSD.

USDRE makes recommendations for approval of programs that are transmitted to the Services as program guidance by the start of the fiscal year and reflect USDRE guidance on the program submitted in support of the request for apportionment. USDRE indicates the part of the program that is not approved (deferred) and the rationale underlying the decision.

5.1.2 Documentation of RDT&E,N Apportionment. The Comptroller of the Navy provides notification of the apportionment of RDT&E,N funds and approves allocation to ASN(R,E&S) by means of the following documents:

5.1.2.1 Apportionment and/or Reapportionment Schedule (DD Form 1105). This document records the action of the Comptroller of the Navy, the Office of the Secretary of Defense, and the OMB on the requested apportionment of appropriated funds and reimbursable authority to the Department of the Navy for the RDT&E,N appropriation. Appropriated funds are not available to the Department of the Navy for obligation until final authorization (SD 440) has been completed. The DD 1105 is prepared by the ONR as staff to ASN(R,E&S).

5.1.2.2 RDT&E Program/Fund Authorization (SD Form 440). Signed jointly by the USDRE and ASD(Comptroller), this document specifies the amounts deferred and the amounts approved for obligation for each program element. When appropriate, the Comptroller of the Navy will append to the SD 440, in the letter of

transmittal, additional fiscal guidance and/or limitations.

5.1.2.3 Budget Activity Allocations (NAVCOMPT Form 2058). This document effects the allocation of available funds from the Comptroller of the Navy to ASN(R,E&S).

5.1.3 Operating Budget Allocations by ASN(R,E&S). Allocation to administering organizations is accomplished with NAVCOMPT Form 2197, RDT&E,N Operating Budget Allocations, prepared by OCNR acting as staff to ASN(R,E&S). Amounts allocated are in accordance with higher level allocations and apportionments by the OMB, OSD, and NAVCOMPT and are based on program guidance from CNR and Director RD&A for their respective program areas.

5.1.4 Action on General Provisions. Reports on authorization and appropriation acts, and the acts themselves, contain general provisions requiring actions by the Department of the Navy.

Reports and acts are carefully reviewed to identify actions required. Responsibilities are assigned and followup procedures established to make sure that appropriate actions are taken.

DODDIR 5545.2; DODINST 5545.3 (NAVCOMPT 7130.25); NAVCOMPTINST 7130.25

5.1.5 Administration of Deferrals. Deferrals established by USDRE, ASD (Comptroller), or Navy officials may be temporary, requiring only completion of Congressional action on the DOD Appropriations Act or submission of additional program information, or they may be of indefinite duration requiring a major program change.

In terms of day-to-day operations as the year progresses, programs that are partially deferred may be jeopardized. In these situations, the need for additional incremental releases must be anticipated to preclude work stoppages and the jeopardizing of relations with contractors.

Some programs remain in a deferred status throughout the year owing to lack of justification

considered adequate by ASD (Comptroller) or USDRE. These may be carried over into the next fiscal year, used for the original purposes when eventually approved, or the resources may be reprogrammed to meet other program requirements.

5.2 OBLIGATION AND EXPENDITURE OF FUNDS

The process of apportionment, allocation, and allotment extends the authority to obligate funds down through the organization. That is, it makes it possible to issue orders, make contracts, and otherwise do things which will establish an obligation for an eventual expenditure. Obligation authority and program approval are the tools through which control is exercised in execution of the budget.

DODDIR 7200.1

5.3 ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Improvement in financial management systems has been a continuing objective. It should be expected that change and improvement will characterize the R&D accounting and other resources management systems for many years.

DODINST 7220.24; NAVSO P-3062 Financial Management of Resources, RDT&E,N; NAVCOMPTINSTS 7044.8;

5.3.1 Objectives of R&D Accounting. The basic objectives of the R&D accounting system include the following:

- To provide a standardized means and data base for the collection of all financially oriented information used in programming, budgeting, and accounting
- To serve the reporting needs of managers at all echelons within the DOD

- To meet the data requirements of the Congress, OMB, the Treasury Department, and other Government agencies
- To employ the most useful information-processing techniques, including the appropriate use of automatic data processing equipment and optimum standardization of data elements and codes
- To conform to statutory requirements for financial management systems, including the accounting principles and standards prescribed by the Comptroller General of the United States and related legislation
- To estimate and justify total and annual requirements for implementation of plans
- To identify all costs to end product and performing activity

The purposes for which accounting systems are used have undergone historical development. When financial systems were originally established, the primary concern was to prevent breaches of trust and misappropriation of public funds. Accounting and other financial systems were therefore concerned primarily with the purposes for which funds were appropriated and the status of unobligated funds.

While the necessity to account for obligations remains, emphasis has shifted to resources management systems that can provide government managers with the information they need to put public resources to their most productive use in accomplishing public purposes. Accordingly the R&D accounting system is designed to:

- Focus on outputs and resources used
- Focus on managers who are responsible for effective and efficient utilization of resources
- Focus on actual performance in relation to planned performance
- Permit the use of operating budgets as a primary aid in management control at each organizational level.

The following paragraphs discuss a number of aspects of the continuing evolution in accounting techniques that seek to inject more useful measures of effectiveness and feedback into the planning, programming, and budgeting phase of financial management.

5.3.2 Harmonizing Programming, Budgeting, and Accounting. A basic improvement in the accounting system has been the provision for collection of financial data through uniform accounting classifications which are used by all RDT&E managers. These classifications, which provide uniform techniques for data collection down to the lowest level of concern to managers, are based upon the structures used in programming and budgeting.

5.3.3 Identification of RDT&E Costs. Effective identification of RDT&E costs depends on two things

- Distinguishing "investments" from "expense"
- Ensuring that the RDT&E appropriation is in fact chargeable for all feasible and appropriate costs of research and development.

DODINST 7040.5 (SECNAV 7040.6); DON Budget Guidance Manual (NAVCOMPT 7102.2); NAVCOMPT Manual

5.3.3.1 Expenses vs investments. Current instructions provide detailed guidance for assigning costs to the categories of "expenses" or "investment." The criteria set forth in these instructions consider (1) the intrinsic or innate qualities of the item, such as durability, in the case of an investment cost, or consumability, in the case of an operating cost, and (2) the conditional circumstances under which an item is used or the way it is managed.

5.3.3.2 Research and development cost definitions. Instructions dealing with this step establish criteria and definitions to be used in specifying and classifying the costs of

R&D program of the FYDP, (2) specifying and classifying the programs and financial content of accounts that provide R&D resources in the DOD budget, and (3) defining the financial content of the related accounts within the DOD management accounting system. In other words, these instructions seek to provide criteria to answer the question, "What is an RDT&E cost?"

5.3.4 Distribution of Costs to Benefiting R&D Projects. Several systems are used to distribute costs incurred at each individual RDT&E activity to the productive work accomplished. Large multifaceted RDT&E activities, such as the Naval Air Development Center, employ working capital funds. Less complex RDT&E activities employ operating budgets as alternative working capital arrangements. A third class of small and simple activities can adequately relate costs to results without such sophisticated accounting devices.

5.3.4.1 Navy Industrial Fund (NIF). NIF provides working capital for an industrial-type activity, such as a shipyard, laboratory, or aircraft-overhaul organization. Under NIF, the activity pays its expenses—manpower, material, utilities, administration, etc.—out of working capital and charges its customers the full cost of its products or services. These costs, compared with other industrially funded Government organizations and industry, provide a measure of the organization's efficiency in the use of resources.

DODDIR 7410.4; DODINST 7410.5; NAVCOMPT 7331.1; NAVCOMPTINST 7331.2

5.3.4.2 Operating budgets. An operating budget is a tool for managing resources available to a single plan, the operating budget, direct and indirect costs, annual budget, and performance, and actual results.

AD-A179 818

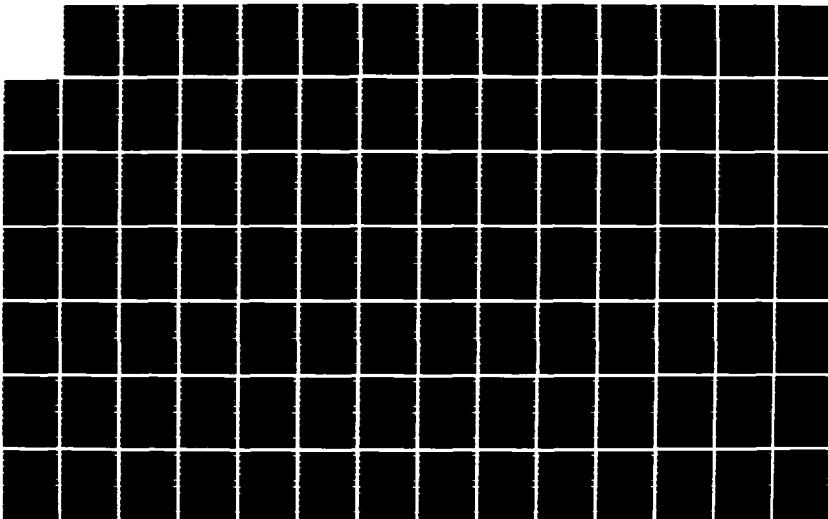
RDTE/ACQUISITION MANAGEMENT GUIDE REVISION(U)
DEPARTMENT OF THE NAVY WASHINGTON DC JAN 87
NAVS0-P-2457-REV

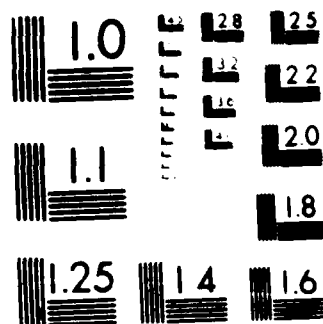
2/3

UNCLASSIFIED

F/G 5/1

NL





MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

Financial plans and accounting reports in support of the operating budget provide analyses of direct, indirect, and general costs (according to cost center) and show the basis for and distribution of indirect and general costs to direct work. These techniques provide the basis for facility management.

5.3.5 Accounting for Accrued Expenditures.

The central function of management is to put resources to their most productive use in achieving the results required by the mission. In carrying out this function, managers must make tradeoffs, i.e., move resources from less to more productive uses. To do this, management needs information on the relationship between resources used and results produced. Providing management that information is the central idea behind accrual accounting.

Accounting systems provide significant milestones in the consumption of financial resources. The traditional milestones have included authorization, obligation, and disbursement: obligation occurs when the user legally becomes liable for payment of costs for labor, materials, or contractual goods and services; disbursement occurs when payment for goods and services is actually made. Although these milestones are significant and necessary for financial management, they bear no relationship to the effectiveness of the use of resources. Most obligations in the RDT&E,N appropriation occur when contracts are awarded or when work requests are accepted; obligation, therefore, indicates only that work is ready to begin, not that it has actually begun. Disbursements against work requests and contracts do not occur until after costs are incurred and, in some cases, not until years later. An accrued expenditure, on the other hand, occurs when goods or services are received, when performance is accepted, or when other expense is incurred, whether payment has been made or not. Thus, accrued expenditure is a financial parameter closely related to performance.

In order to make accrued expenditure information available to all RDT&E managers in the Navy, the accounting system has established general ledger accounts for recording and reporting accrued expenditure.

DODINST 7220.24

5.4 PROGRAM MANAGEMENT PROPOSAL (PMP)

Before funding proposed changes to an ongoing acquisitions program, a PMP covering the proposed change and costs must have been approved by SECNAV. (See 3.3.14.)

SECNAVINST 5000.33

5.5 REPROGRAMMING

One of the principal functions of the manager is making tradeoffs (moving resources between programs and projects to their most productive use). The execution of the program, in the interest of maximum effectiveness, will inevitably demand changes since the budget submission is based on plans that are 15 months old or more by the time execution begins.

While the effectiveness of management may demand shifting funds from specific uses originally planned to others where they can make a greater contribution to military worth, the maintenance of good faith with the Congress requires that funds be spent for the purposes justified before Congress.

Congressional committees concerned with the Department of Defense Authorization and Appropriations Acts generally accept the view that rigid adherence to the amounts justified for

<p>REMINDER: The Guide's function is to help the reader understand the overall system and identify sources of more detailed information. As ASN(R,E&S) stated in his Foreword, "The Guide ... cannot be cited as authority for official actions."</p>
--

5.5.1

individual budget activities or programs may unduly jeopardize the effective accomplishment of planned programs in the most businesslike and economical manner; and that unforeseen requirements, changes in operating conditions, revisions in price estimates, wage adjustments, etc., require some diversion of funds from the purposes for which they were justified.

Reprogramming procedures, developed in consultation with the committees, provide a firm basis for retention of Congressional control over the utilization of Defense appropriations by making sure that the Congressional intent is carried out while, at the same time, providing a timely device for achieving flexibility in the execution of Defense programs.

The Armed Services and Appropriations Committees of both Houses have directed that the Department of Defense adhere, within certain accepted variances, to the program justified in the budget. Before any change that exceeds established thresholds is made in a budget program, or any change is made in a program which has been designated "special interest," a reprogramming action must be taken so as to provide both committees with a description of significant variations from the justified amounts and purposes. The established procedures are as follows:

- **Establish the base from which actions may be taken.** All reprogramming actions are accomplished in relation to a "Base for Reprogramming Actions" which is established immediately after final Congressional action on the authorization and appropriation has been completed. It is submitted on DD Form 1414 through OSD to the Congressional committees and identifies the purposes in terms of budget subactivities (program elements) for the RDT&E appropriation and the amounts for which funds have been authorized and appropriated. It also reflects the specific application of adjustments made by the Congress and/or the specific application of adjustments made by DOD when not specified by the Congress. For example, Congress may make an across-the-board reduction of 3 percent in the RDT&E appropriation

without specifying how it will be applied. The DD Form 1414 will show how the DOD elected to apply this reduction to specific programs.

- **Specify actions requiring prior written approval of both SECDEF or his Deputy and the Armed Services and Appropriations Committees of Congress.** Any reprogramming action involving the application of funds, irrespective of the amount, to items, programs, or functions in which the Congressional committees have expressed a special interest requires *prior* SECDEF and Congressional approval.
- **Specify reprogramming actions requiring prior written approval of SECDEF with notification of the Armed Services and Appropriations Committees of Congress.** Any reprogramming action, single or cumulative, involving an increase of \$4 million or more in any budget subactivity, including the addition of a new budget subactivity line item of \$2 million or more or the addition of a new budget subactivity line item, the cost of which is estimated to be \$10 million or more over a three-year period, requires the prior approval of SECDEF or his Deputy. SECDEF will notify the Congressional committees of such approval.

<i>DODDIR</i>	<i>7250.5</i>	<i>(NAVCOMPT</i>	<i>7133.1);</i>
<i>DODINST</i>	<i>7250.10</i>	<i>(NAVCOMPT</i>	<i>7133.1);</i>
<i>NAVCOMPTINST 7133.1</i>			

Directives listed following the introduction to a section generally apply to all the following information in the section and are not repeated.

5.5.1 Reprogramming Procedures. Each request for reprogramming approval (DD Form 1415) includes an explanatory statement concisely setting forth the need for the reprogramming. These statements must contain all the details necessary for critical reviewing by authorities and Congressional committees. The action must

identify all compensating increases and decreases with the appropriation total so that the net effect is zero for the individual reprogramming proposal. This does not apply when the reprogramming involves a transfer of funds into or out of the appropriation, a difference that would then show up as a net change to the appropriation total.

All reprogramming actions for RDT&E involving prior approval or notification of Congressional committees will be reviewed by USDRE for concurrence or comment before being routed to the Secretary of Defense.

Advance notification of below-threshold reprogramming actions for new programs or line items not otherwise requiring prior approval or notification action will be made to the House and Senate Appropriations Committees. This notification will be made by letter directly to the committees by the DOD Component concerned, after coordination with the OASD(C).

5.5.2 Reprogramming Hearings. Periodically throughout the year, reprogramming hearings are conducted by Congressional committees.

5.5.3 Reprogramming Reports. A semiannual reprogramming report, submitted to Congressional committees, summarizes all reprogramming actions approved during the period, including those which did not, individually, require submission of reprogramming proposals to the Congressional committees. This report is prepared by ONR on DD Form 1416, "Report of Programs."

5.6 AUDITS AND REVIEW

Programming, reprogramming, and accounting controls are supplemented by periodic audits and reviews conducted by certain offices inside and outside the Navy.

DODDIRS 7600.2 (SECNAV 7510.7), 7650.2; DODINST 7600.3 (SECNAV 7510.7); SECNAVINSTS 5740.26, 7510.7

5.6.1 General Accounting Office (GAO). The GAO is an agency of the Congress completely independent of the Executive Branch. It is the responsibility of the Comptroller General to investigate all matters relating to the receipt, disbursement, and application of public funds. The Comptroller General makes an annual report to the Congress plus special reports as needed. In these reports "recommendations looking to greater economy or efficiency in public expenditures" are made.

Section 313 of the Budget and Accounting Act of 1921 gives the Comptroller General the power to examine all Executive Branch records. This act states that:

... all departments and establishments shall furnish to the Comptroller General such information regarding the powers, duties, activities, organization, financial transactions, and methods of business of their respective offices as he may require ...

In former times, audits by the General Accounting Office tended to emphasize the legality of transactions. GAO audits were focused on accounting matters, particularly whether expenditures were made in accordance with the law and intent of Congress. In recent times, emphasis has increasingly been on the question of how efficiently, effectively, and economically government business has been conducted.

5.6.2 Navy Audit Program. The Navy Audit Program encompasses two distinct types of audit—internal and contract. Internal audit is the independent appraisal of accounting, financial, and related matters of an operating nature. It is concerned not only with detecting the kinds of deficiencies which would be of interest to an external auditor—GAO, for instance—but also with providing management with the information needed to improve the economy and effectiveness of operations. In short, internal audit is designed to provide management both protective and constructive services.

Title IV of the National Security Act amendments of 1949 established offices of comptroller

in the Department of Defense and in the Services and established internal audit as a function of these offices. Within the Office of the Comptroller of the Department of Defense, there is an assistant Comptroller for Audit. Within the Department of the Navy, the Comptroller is responsible for auditing; such audit functions are performed by the Auditor General of the Navy.

Contract audit involves the examination of books and records of private contractors and verification of their cost representations insofar as work with the Navy is concerned. Contract audit also provides contracting officers with advice useful to them in negotiating contract prices. Both internal and contract audit are conducted under the Auditor General of the Navy.

SELECTED REFERENCES ON EXECUTION OF THE RDT&E BUDGET

DODDIR 7250.5, "Reprogramming of Appropriated Funds," states DOD policy with respect to reprogramming proposals and actions relating to the appropriation accounts covered by the Department of Defense Appropriations Act. This is the most fundamental DOD directive on reprogramming.

DODDIR 7410.4 (NAVCOMPT MANUAL VOL V), "Regulations Governing Industrial Fund Operations."

DODDIR 7200.1 (NAVCOMPT MANUAL VOL. II), "Administrative Control of Appropriations," prescribes regulations to prevent obligation in excess of apportionment and to fix responsibility

for creating an obligation or expenditure in excess of an "appropriation, apportionment, reapportionment, or subdivision thereof."

SECNAVINST 7510.7, "Department of the Navy Audit Manual for Management," together with its enclosures, **DODDIR 7600.2**, "Department of Defense Audit Policies," and **DODINST 7600.3**, "Internal Audit in the Department of Defense," promulgates basic policies and responsibilities for audit within the Department of the Navy.

NAVSO P-3062, Parts 1 and 2, "Financial Management of Resources—Research, Development, Test and Evaluation, Navy."

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The "Master Reference List" shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult **NAVPUBNOTE 5215**, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

CHAPTER 6
MANAGING ACQUISITION OF R&D EFFORT
TABLE OF CONTENTS

6.1	General Considerations	6-1
6.1.1	Fundamental Policy	6-1
6.1.2	Non-Development Items (NDI)	6-1
6.1.3	Basic Roles	6-2
6.1.4	Classes of Performers	6-2
6.1.4.1	In-house performers	6-2
6.1.4.2	Out-of-house performers	6-2
6.1.5	Other Execution Means	6-2
6.1.6	Major Laboratory Functions	6-2
6.1.6.1	Technology base	6-2
6.1.6.2	Advanced Development	6-3
6.1.6.3	Support for systems development	6-3
6.1.6.4	Source of technical advice	6-3
6.1.7	The In-House vs Contracting-Out Decision	6-3
6.2	Performance by In-House Organizations	6-3
6.2.1	Identifying Laboratory Capability	6-3
6.2.2	Negotiation with Laboratories	6-4
6.2.3	Funding	6-4
6.2.4	"Contracting" with In-House Laboratories	6-4
6.2.5	Monitoring and Progress Reporting	6-4
6.2.6	Navy Laboratories IR/IED Program	6-4
6.3	Performance by Out-of-House Organizations	6-5
6.3.1	Federal Acquisition Regulation (FAR)	6-5
6.3.2	Necessity for Visible Propriety	6-5
6.3.3	Role of Small Business	6-5
6.3.4	The Importance of Competition	6-5
6.3.5	Overview of a Major Development Program	6-6
6.3.6	Execution Functions	6-6
6.3.7	Acquisition Plan (AP)	6-6
6.3.7.1	Non-Development Items (NDI) in the AP	6-7
6.3.8	Accelerated Development Procedures	6-7

6.4 Contracting Technical Assistance	6-7
6.4.1 The Acquisition Team	6-7
6.4.2 Contract Activities	6-7
6.5 Contracts and Other Acquisition Instruments	6-7
6.5.1 Grants	6-7
6.5.2 Contracts	6-7
6.5.2.1 Cost-sharing contract	6-7
6.5.2.2 Cost contract	6-8
6.5.2.3 Cost-plus-fixed-fee contract	6-8
6.5.2.4 Cost-plus-incentive-fee contract	6-8
6.5.2.5 Fixed-price-incentive contract	6-8
6.5.2.6 Firm-fixed-price contract	6-8
6.5.2.7 Purchase order	6-8
6.5.2.8 Letter contract	6-8
6.5.3 Specifications	6-8
6.5.4 The Work Statement	6-9
6.5.5 Other Contract Provisions	6-9
6.5.5.1 Patent rights	6-9
6.5.5.2 Data acquisition and data rights	6-10
6.5.5.3 Independent Research and Development (IR&D)	6-10
6.5.6 Contracting for Research and Exploratory Development	6-10
6.5.6.1 Full disclosure policy	6-10
6.5.6.2 Government equipment for universities and other nonprofit institutions	6-11
6.6 Acquisition of R&D Via Competitive Proposals	6-11
6.6.1 Procurement Request (PR)	6-11
6.6.2 Solicitation Documents	6-11
6.6.3 Promulgation of Solicitation Documents	6-11
6.6.4 Evaluation of Proposals and Bidders	6-12
6.6.5 Source Selection	6-12
6.6.6 The Broad Agency Announcement Technique	6-12
6.7 Management Activities During Execution	6-12
6.7.1 Management Control Systems	6-12
6.7.2 Technical Reports	6-13
6.7.3 Progress Reports	6-13
6.7.4 Cost Reports	6-14
6.7.4.1 Cost Performance Report (CPR)	6-14
6.7.4.2 Contractor Cost Data Reporting (CCDR)	6-14
6.7.4.3 Contract Funds Status Report (CFSR)	6-14

6.7.5	Administration of Contracts	6-14
6.7.6	Selected Acquisition Report (SAR)	6-15
6.7.7	Other Reports	6-15
6.7.7.1	Research and Technology Work Unit Summary (DD Form 1498)	6-15
6.7.7.2	RDT&E project listings	6-15
6.7.7.3	Reporting by laboratories/centers	6-15
6.7.8	Changes and Amendments to Contracts	6-15
6.8	Execution of Marine Corps R&D	6-15
6.8.1	Alternative Execution Means	6-15
6.8.2	Program Cognizance within HQMC	6-16
6.8.3	Management of Acquisition	6-16
6.8.4	Role of the Development Center	6-16
6.8.5	Role of the Navy Laboratories	6-16
6.9	Program Management	6-16

CHAPTER 6

MANAGING ACQUISITION OF R&D EFFORT

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

This chapter is concerned with establishing and administering the arrangements under which performers, whether in-house or under contract, get the job done.

6.1 GENERAL CONSIDERATIONS

6.1.1 Fundamental Policy. In the acquisition of research and development, it is fundamental Department of the Navy policy to:

- Exploit the best scientific and technological sources and, by doing so, obtain the best mix of cost, performance, and schedules.
- Perform systems development *only* when the mission need cannot be satisfied through use of existing non-development items.
- Encourage continuing competition with multiple sources performing concurrent but separate development up to FSED and dual competing sources for a single design in production.
- Utilize fixed-price type contracts beginning in FSED. Risk will be lowered by tailoring specifications and keeping program changes firmly under control.
- Provide as effectively as possible for the long-term capability of the Government to competently plan and manage its R&D programs. Program Managers will be

held accountable, will be longer term, and will be better trained (see 1.6.3 and 1.6.4). Government facilities must carry a reasonable part of Research and Exploratory and Advanced Development if they are to be knowledgeable customers for later development by industry.

- Expect contractors to invest in programs commensurate with their commercial ventures. Industry investment in tooling and test equipment for production is required.

SECNAVINST 4210.6. (See 4C for excerpts.)

6.1.2 Non-Development Items (NDI). NDI solutions to stated requirements must be pursued aggressively by each Program Manager throughout the acquisition process. Explicit consideration of NDI alternatives are to be made at all Milestone I, II, and III decision meetings based upon analysis and trade-offs of performance, cost, and schedule requirements.

The Navy Specification Control Advocate functions as the Navy NDI Advocate. As such, he monitors NDI related activities of the SYSCOMs and PMs and reports to SECNAV on the effectiveness of implementation of DON policy on NDI.

DODD 5000.1; SECNAVINST 4210.7

6.1.3

6.1.3 Basic Roles. The acquisition process may involve these roles in the User-Supplier dialog and interaction (2.2.9) so essential to an effective RDT&E process:

- The "Technical Customer" (the User) is the official or organization with the requirement. This chapter is written from the perspective of the Technical Customer who is the RDT&E manager arranging for the research and development effort.
- The "Performer" is the organization doing the work.
- The "Contracting Officer" has the basic responsibility for all contractual matters as described in the Federal Acquisition Regulation and other regulations.
- The User role in the User-Supplier relationship may be played by the Technical Customer alone in an in-house acquisition, or by the team of the Technical Customer and the Contracting Officer when acquisition is by contract.

6.1.4 Classes of Performers. Performers of R&D can be divided into two general classes, in-house and out-of-house, with several sub-categories in each class.

FAR Parts 8 and 35

6.1.4.1 In-house performers. Government-owned, Government-operated (GOGO) laboratories are the principal in-house performers, accounting for approximately 30% of the Navy's RDT&E program. In addition, the RDT&E manager may use various staff elements of his command.

In-house performance involves the least formal and least time-consuming preliminaries. After an informal dialog between the technical people on both sides, a general understanding is reached and the in-house equivalent of a contract is issued.

6.1.4.2 Out-of-house performers. They include;

- Commercial contractors account for the bulk of Engineering and Operational Systems Development and about two-thirds of the entire RDT&E program.
- Educational and other nonprofit institutions whose primary purpose is the conduct of scientific research are the primary performers of fundamental research.
- Federal Contract Research Centers (FCRCs) operate like in-house laboratories but are actually contractor-operated facilities. The only current Navy FCRC is the Center for Naval Analyses operated by the Hudson Institute.

6.1.5 Other Execution Means. There are several other means for execution of RDT&E effort in addition to Navy in-house laboratories and contractors. Funds may be transferred to another Government agency—such as NASA, Army, Air Force, National Bureau of Standards, HHS, National Academy of Sciences, National Institutes of Health, or National Security Agency. Under our Military Assistance Program, foreign research programs showing promise may be recipients of cost sharing or aid contributions which entitle us to share in results, reports, and other data. NATO-coordinated production arrangements which aid weapons standardization of our allies may entitle us to data and production items.

6.1.6 Major Laboratory Functions. The role of the in-house laboratories in carrying out RDT&E effort spans the whole spectrum from research through operational support. While individual in-house laboratories have strong historical ties with individual Commands and Offices, the laboratories are "corporate assets" available to all RDT&E managers and decision makers in need of their capabilities.

6.1.6.1 Technology base. The Navy's in-house laboratories are the principal repository of the Navy's scientific and technological expertise. This expertise is developed and maintained pri-

marily through the Research and Exploratory Development programs and is exploited in the conception of advanced systems, product improvements to weapon systems, and resolution of fleet deficiencies.

IR/IED, discussed in paragraph 6.2.6, plays a vital role in development of the technology base.

6.1.6.2 Advanced Development. The in-house laboratories also directly manage a large portion of Advanced Development, even though much of the actual development is performed by industry under contract. Laboratory responsibilities for these programs may be total program management responsibility, deputy project management, or technical direction. The criteria for determining the scope of laboratory responsibility for an Advanced Development program include the extent to which technology has been developed and the system conceived by the laboratory and the availability of technical expertise.

6.1.6.3 Support for systems development. In-house laboratories also provide a wide range of services in support of major system developments. These services include feasibility studies and other aspects of the concept formulation process; development of plans such as the Acquisition Plan, the Integrated Logistics Support (ILS) plan, etc.; development of specifications; provision of experts for the proposal evaluation and source selection process; development of subsystems for which industry does not have adequate capability; systems development for selected programs; and test and evaluation. Thus the laboratory expertise ensures that the Navy can enter into contract negotiations as an informed buyer.

The laboratories may also be called upon to help solve problems encountered during development.

6.1.6.4 Source of technical advice. The technical staffs of laboratories and other in-house organizations provide a source of advice and consultation available to all Department of the Navy RDT&E managers. The availability of this base of in-house technical competence is essential to protect against the situation where outside technical advice becomes *de facto* technical decision

making. The laboratories also provide technical representatives to ARBs, NPDMs, etc. for an independent technical assessment of the program.

6.1.7 The In-House vs Contracting-Out Decision. In some cases, the decision that must be made as to whether to conduct a project in-house or contract it out commercially is far from easy.

Government policy for implementation of RDT&E calls for performance of RDT&E effort by the class of institution—Government laboratory, educational or nonprofit institution, private contractor—which can perform the work most effectively and efficiently, subject to certain qualifications. A series of actions to contract out important activities, each wholly justified when considered on its own merits, may, when taken together, erode the Government's ability to manage its research and development programs.

It is essential that Government laboratories gain substantial experience in relevant technologies if they are to be effective in carrying out their roles in the weapons acquisition process.

Another important consideration is the cost, in time and technical and administrative man-hours, required to get a project underway. The administrative steps in providing funds and program direction to in-house laboratories are far simpler than awarding a contract. In addition, the in-house laboratories have available teams of technical experts aware of the technical threat and knowledgeable of Navy problems and the operational environment.

6.2 PERFORMANCE BY IN-HOUSE ORGANIZATIONS

In-house organizations, particularly the in-house laboratories, constitute a base of scientific, technological, and engineering knowledge and talent tailored to the Navy's needs. This section discusses the kinds of tasks in-house organizations do best and describes processes for arrangement, monitoring, and funding of performance.

6.2.1 Identifying Laboratory Capability. Identifying the laboratories, or other in-house organizations, with the capabilities to meet a particular need is not difficult.

Appendix F lists DON laboratories and R&D centers and provides brief statements of their missions. NAVMAT Instruction 5450.27C (or its superseding SPAWARINST) defines mission, functions, and leadership areas of the major laboratories and centers formerly under command of the Chief of Naval Material. The two-volume **RDT&E Center Management Briefs** contains information on missions, facilities, programs, major accomplishments, organization, personnel, funds, and function/responsibilities of each RDT&E center.

Another effective strategy for identifying in-house DON capabilities is to request the Defense Technical Information Center to do a search of its collection of abstracts (DD 1498, "Research and Technology Work Unit Summary") of current work to identify work most closely related to the technical need (D3.1.1). The Technical Customer can then contact either the sponsor of the work or the Principal Investigator.

NAVMATINST 5450.27C (or superseding SPAWARINST); RDT&E Center Management Briefs

6.2.2 Negotiation with Laboratories. When an in-house laboratory performs a task, the process of "negotiating the contract" is relatively simple (see 6.1.4.1). The basic agreement is worked out through informal negotiations by the principals involved on both sides. Once agreement has been reached, the proposed work is incorporated into the laboratory program and reported in the DOD Work Unit Information System (DD 1498). If the customer wishes to fund the proposal or modify it, he prepares a task assignment to the laboratory in letter form or in a format specified by the individual Systems Command.

The above documentation, essentially contractual in nature, provides statements of the work to be done, milestones, and cost estimates.

6.2.3 Funding. The major RDT&E activities of the Navy operate under the Navy Industrial Fund (5.3.4.1). When an agency of the Department of Defense orders RDT&E work or services from an NIF facility, a work request (NAVCOMPT Form

2275) is used. Funds to support work requests are obligated by the sponsor upon acceptance by the NIF activity.

For RDT&E activities not operating under NIF, the management command issues an annual operating budget (5.3.4.2). This budget does not obligate the funds of the management command. Sponsors outside the management command may order work from these activities by using a work request (NAVCOMPT Form 2275). Acceptance of the document by the activity obligates the sponsor's funds.

6.2.4 "Contracting" with In-House Laboratories. Tasks are assigned to in-house organizations through work requests. Work requests document an agreement with a laboratory or other in-house organization for performance of a task. When placed with and accepted by the laboratory, the work request obligates funds in the same manner as a contract with a commercial concern. While the work request includes a brief technical description of the work to be done, it is normally supplemented by an amplifying letter or task assignment document.

DODINST 7220.1; Marine Corps Order 3900.11

6.2.5 Monitoring and Progress Reporting. The principal means by which customers keep track of work being performed for them by the laboratories are informal phone contacts and visits, both by the customer to the laboratory and by performers to the customer's organization.

6.2.6 Navy Laboratories IR/IED Program. Under the IR/IED (Independent Research/Independent Exploratory Development) Program, funding is provided to each laboratory for projects initiated and managed by the laboratory. The principal objective of the IR/IED Program is to provide a means for capitalizing immediately (i.e., outside the normal budget cycle and process) on in-house generated ideas for solution of Navy and Marine Corps problems.

NAVMATINST 3920.3C (or superseding SPAWARINST)

6.3 PERFORMANCE BY OUT-OF-HOUSE ORGANIZATIONS

This section describes the overall process of executing a major program through contracting with industry.

6.3.1 Federal Acquisition Regulation (FAR). The FAR is the government-wide acquisition regulation containing acquisition policies, procedures, contract clauses, and forms. Part 35 is on R&D. The FAR replaced the DAR (Defense Acquisition Regulation), formerly ASPR (Armed Services Procurement Regulation), in April 1984.

The FAR is supplemented by the DOD FAR Supplement (DFARS) and the Navy Acquisition Regulation Supplement (NARSUP).

6.3.2 Necessity for Visible Propriety. Contracting is public business and must be conducted with scrupulous regard for the rights of all competitors. All competitors have the right by law to be informed of the outcome of contracts, the basis of the award, and the specific grounds for non-selection. This information must, by law, be maintained in an official contract file.

Pre negotiation and post negotiation Business Clearance requirements prescribed in Navy Acquisition Regulation Supplement (NARSUP) 1.690 must be fulfilled on each contract action as applicable.

FAR 4.801; NARSUP 1.690

6.3.3 Role of Small Business. It is the policy of the Department of Defense to place a fair proportion of its total contracts for supplies, research and development, and services with small business concerns wherever such businesses are capable of participating in the Navy's programs.

FAR 19.201 and 35.004(a); DFARS 4.671-5(d) (3), Navy Small and Disadvantaged Business Personnel Directory (NAVSO P-2485) provides contact points for small businessmen in dealing with laboratories and other technical organizations.

6.3.4 The Importance of Competition. Part 6 of the FAR deals with competition requirements in government contracting. Current law requires, with certain limited exceptions, that contracting officers use exceptions, that contracting officer use "full and open competition" in soliciting offers and awarding contracts. The competitive procedures available for use in fulfilling this requirement are: (a) sealed bids, (b) competitive proposals, (c) combination of competitive procedures, and (d) other competitive procedures.

Since research and development contracting generally is not suited to sealed bidding or combination procedures involving sealed bidding, competitive R&D contracts usually result from competitive proposals or other competitive procedure.

The competitive proposal procedure involves issuance of a formalized solicitation document called a Request for Proposals (RFP) (see 6.6.2) for an individual R&D requirement. The chief procedure in the "other" category is the broad agency announcement technique which may be used only for basic research.

The importance of basing competition primarily on *performance, validated by T&E if possible*, (as distinguished from paper promises), should not be underestimated. DON policy, set forth in SECNAVINST 4210.6, states:

The development cycle of each project/program will begin with a minimum of two contractors/contractor teams performing concurrent but separate development up to FSED at which time it will normally be narrowed to two contractors developing a system to one design.

The FSED contractors will then normally compete for annual production buys.

Despite the strong imperative for competition, situations occasionally arise in R&D contracting where competition is not possible. FAR 6.302 lists seven circumstances which permit other than full and open competition. Of these, three are more likely to pertain to R&D:

- | | |
|---------|--------------------------------|
| 6.302-1 | Only one responsible source |
| 6.302-2 | Unusual and compelling urgency |

6.3.5

6.302.3 Industrial mobilization; or experimental, developmental, or research work

The use of any of these exceptions requires written justifications and approvals (commonly called "J&A's"), which are jointly prepared by the technical personnel and the Contracting Officer. Details on the requirements, content, approval, and availability of such justifications are provided in FAR 6.303.

Responsibility for ensuring maximum effective, sustainable competition in Navy programs rests with the Competition Advocate General.

10 U.S.C.2304; 41 U.S.C. 253; FAR Part 6; SEC-NAVINST 4210.6

6.3.5 Overview of a Major Development Program. A major program almost always involves many tasks executed under a large number of different contracts and task orders. Although in-house laboratories seldom act as prime contractors on development contracts — there are exceptions — they participate in some capacity in most major programs.

For example, a major program such as a new carrier fighter, in addition to the prime contract, will involve a number of contracts with industry for both hardware and software. Hardware contracts cover various items of Government-furnished equipment (GFE). Engineering services and technical assistance may be provided under contract. In-house laboratories will be heavily involved in the definition of the system, preparation of specifications, evaluation of proposals, monitoring the performance of contractors, and in providing technical assistance in solving problems in the laboratories' area of technical expertise. Major tasks, such as development of a brass-board model under Advanced Development, may be assigned to a laboratory, which in turn may contract all or portions of the work to industry.

6.3.6 Execution Functions. The functions listed below are basic to the execution of all R&D

effort, and the remainder of the chapter is concerned with the means to accomplish these functions:

- Acquiring an adequate base of performer candidates.
- Selection of best qualified participants.
- Establishment of performance agreements.
- Conveying of Government-furnished inputs.
- Performance of contract.
- Monitoring and reporting on execution.
- Compensation of performers.

6.3.7 Acquisition Plan (AP). A formal AP is required when estimated development costs are \$2 million or more, or when production/services costs are \$5 million or more for any fiscal year or \$15 million or more overall.

The AP is the principal document for in-depth program review and oversight by the Navy Acquisition Executive (see 1.4.7.1). APs meeting the criteria of NARSUP 7.102-90 (a) must be approved by the NAE with approval documented in a Program Endorsement Memorandum (PEM). For development acquisitions, these criteria are total contract cost in excess of \$5M for NAVAIR and NAVSEA, and in excess of \$2M for all other activities. In general, neither a formal solicitation nor a **Commerce Business Daily** synopsis may be issued prior to signing of the PEM.

The AP is prepared at the time of assignment of the Principal Developing Activity (PDA) and submitted for approval no later than the time the item first appears in the FYDP. The Program Manager is responsible for the AP. The Contracting Officer prepares and maintains the AP for the PM. APs are reviewed annually and updated when major changes occur or upon transition from one development phase to another.

Acquisition planning covers such issues as funding, methods of contracting, source com-

petence and source selection, contract type, competition, cost, delivery, Government-furnished property and information, milestones, future requirements, and contract administration. The Acquisition Plan which begins as a broad outline is expanded and refined as the program goes along.

DFARS 7.1; NARSUP 7.1

6.3.7.1 Non-Development items (NDI) in the AP. It is DON policy to institutionalize NDI consideration during the acquisition process to such an extent that its use becomes the rule rather than the exception. APs must describe the extent to which NDI is planned for use in proposed acquisitions, and justify those cases where use of NDI is not feasible or cost effective.

SECNAVINST 4210.7

6.3.8 Accelerated Development Procedures. Procedures have been established for relaxation of planning documentation requirements and acceleration of the funding and contracting processes for priority development of new weapons or components to meet urgent operational needs. In such cases, although planning documentation is still required, its preparation proceeds parallel with development of the hardware. Such accelerated development is conducted under Rapid Development Capability procedures.

SECNAVINST 3900.37; OPNAVINST 3900.22

6.4 CONTRACTING TECHNICAL ASSISTANCE

This section discusses major sources of technical assistance available to help carry out the acquisition process.

6.4.1 The Acquisition Team. A complex acquisition requires not only the closest coopera-

tion between the Technical Customer and the Contracting Officer, but also the assistance of a large number of specialists. These include legal and patent counsel, scientists and engineers knowledgeable in critical fields of technology, experts in integrated logistic support, etc. Where the Technical Customer's own organization does not have the necessary skills available on its own staff, they can generally be acquired from the laboratories.

6.4.2 Contract Activities. Commands, Offices, and many laboratories have contracts groups or contracts directorates which are legally responsible for all contracting activities and provide staff advice and consultation to the Technical Customer. Generally, such assistance is available long before actual contracting is envisioned for such functions as acquisition planning and the development of the procurement request (PR).

See the organization manual for the command. Also consult the organization's phone book to find the most likely points of assistance within the contracts directorate.

6.5 CONTRACTS AND OTHER ACQUISITION INSTRUMENTS

6.5.1 Grants. The Department of Defense is permitted by law to use grants in support of basic research. Within the Department of the Navy, the Office of Naval Research has been delegated authority to issue grants.

6.5.2 Contracts. A contract is an offer and acceptance backed by legal considerations. Types of contracts normally used to support RDT&E effort include:

FAR Part 16; 35.006

6.5.2.1 Cost-sharing contract. Under a cost-sharing contract the contractor is reimbursed for an agreed portion of his allowable costs, not to exceed an established ceiling without fee.

6.5.2.2

6.5.2.2 Cost contract. A cost contract calls for the Government to pay all allowable costs involved in executing a given research project. The contractor receives no fee. This type of contract establishes an estimate of the total cost for purposes of (1) obligating current funds, and (2) establishing a ceiling beyond which the contractor cannot go (except at his own risk) without prior approval.

6.5.2.3 Cost-plus-fixed-fee contract. The cost-plus-a-fixed-fee contract is similar to the cost contract in that it provides for payment to the contractor of all allowable costs as defined in the contract, and establishes an estimate of the total cost; in addition, however, it provides for payment of a fixed fee based on the nature of work to be performed and upon other factors as stated in FAR 16.306.

6.5.2.4 Cost-plus-incentive-fee contract. The cost-plus-incentive-fee contract is a cost-reimbursement-type contract with provision for a fee which is adjusted by formula in accordance with the relationship which total allowable costs bear to target cost. Under this type of contract, there is negotiated initially a target cost, a target fee, a minimum and maximum fee, and a fee adjustment formula. Factors other than cost, such as a performance and schedule, can also be the basis for contract incentives.

FAR 16.3

6.5.2.5 Fixed-price-incentive contract. The fixed-price-incentive contract is a fixed-price-type contract with provision for adjustment of profit and establishment of the final contract price by a formula based on the relationship which final negotiated total cost bears to target costs. Under this type of incentive contract a target cost, a target profit, a price ceiling (but not a profit ceiling or floor), and a formula for establishing final profit and price are negotiated at the outset.

6.5.2.6 Firm-fixed-price contract. The firm-fixed-price contract provides for a price which is not subject to any adjustment by reason of the cost experience of the contractor in performance of the contract. This type of contract,

when appropriately applied, places maximum risk upon the contractor. Because the contractor assumes full responsibility, in the form of profit or losses for all costs under or over the firm fixed price, he has a maximum profit incentive for effective cost control and contract performance. The firm-fixed-price contract is suitable for use in procurements when reasonably definite design or performance specifications are available and whenever fair and reasonable prices can be established at the outset, or for level-of-effort work.

6.5.2.7 Purchase order. An individual purchase order, DD Form 1155, may be used for purchases under \$25,000. Purchase orders are used only when supplies or services are bought on a fixed-price basis.

6.5.2.8 Letter contract. A letter contract is a preliminary agreement which authorizes immediate start of work. Letter contracts are used only when a definitized contract cannot be negotiated and awarded soon enough to meet the acquisition need. Letter contracts are the least desirable contracting approach, and must be definitized at the earliest practicable date.

FAR 16.603

6.5.3 Specifications. Specifications are clear and accurate descriptions of the technical and other requirements established for supplies or services being procured. They may also spell out procedures for determining whether such requirements have been met. Requirements are sometimes defined by the work statement (see 6.5.4) or a "purchase description" when it is impractical or uneconomical to prepare a specification.

Specifications streamlining is an important DON initiative. The Specification Advocate General is responsible for reviewing development specifications and tailoring them to the operational requirements. This review includes contract data requirements.

There are two general types of specifications. Function or performance specifications define the end results, or capabilities sought, leaving *how* to

achieve those results up to the performer. Design specifications prescribe how the results are to be achieved. Although many procurements employ a combination of the two types by indicating certain design features that must be incorporated (such as kinds of materials to be used) and performance characteristics, function or performance specifications shall be used whenever practicable.

Items for which there is a repetitive demand are described by standard specifications which are known as Federal or Military specifications. Federal specifications cover items used by at least two Federal agencies. Military specifications cover items used primarily by the military departments. These are identified by a three-part symbol beginning with MIL. For example, MIL-H-8775 covers "Hydraulic Systems, Components, Aircraft."

Standard specifications, which are often quite voluminous, are usually incorporated in contracts only by reference.

Formal specifications are available in two listings: the *Index of Federal Specifications, Standards and Handbooks*, and the military *Department of Defense Index of Specifications and Standards* (DODISS). Both are available through normal distribution channels and may be purchased from the U.S. Government Printing Office.

6.5.4 The Work Statement. The work statement is that portion of a contract which describes the work to be done. While most other contract clauses are primarily the responsibility of the Contracting Officer, the work statement is of vital concern to the Technical Customer. Ideally, the work statement as set forth in the Procurement Request (6.6.1), which is prepared by the Technical Customer, will be suitable for use as the contract work statement.

In preparing work statements, these elements are to be considered:

- A general description of the required objectives and desired results.
- Background information to clarify the requirements and show how they evolved.

- Elimination of performance requirements which yield only marginal military worth when compared to cost and/or risk, as certified by CNO/CMC.
- Maximum practical commonality (certifiable by the Program Executive officer (See 1.4.7.2)).
- Technical considerations such as known specific phenomena or techniques.
- Personnel and environmental factors.
- A detailed description of the technical requirements and subordinate tasks.
- A description of reporting requirements and any other deliverable items, such as data, experimental hardware, mockups, prototypes, etc.
- Type of contract.
- Other special considerations.

FAR 35.005(d)

6.5.5 Other Contract Provisions. Federal law and DOD and Service regulations require the inclusion of a variety of clauses in contracts. A number of them are clauses that depend on the type of contract and contractor. Others are special contract requirements suited to the particular contract action. The majority of these clauses are handled by the Contracting Officer with little or no direct input from the Technical Customer. The following, however, are clauses of concern to the Technical Customer since they affect the development and exploitation of technology.

6.5.5.1 Patent rights. Contracts calling for the performance of experimental, developmental, or research work are required by FAR to include a patent rights clause which defines the rights and obligations of the contracting parties with regard to inventions that are conceived or first actually reduced to practice in the course of the contract. Such contracts are required to contain clauses that allow the Government to make

REMINDER: The Guide's function is to help the reader understand the overall system and identify sources of more detailed information. As ASN(R,E&S) stated in his Foreword, "The Guide ... cannot be cited as authority for official actions."

contract results available to other Government agencies and the private sector, consistent with national security and data rights specified in the contract.

FAR 27.2, 27.3

6.5.5.2 Data acquisition and data rights.

It is imperative that all R&D contracts carefully specify the data to be delivered. In planning a developmental procurement, when subsequent production contracts are contemplated, consideration should be given to the need and time required for obtaining a procurement package. The term "procurement package" means plans, drawings, specifications, and other descriptive information and data necessary to achieve competition in production contracts.

Contracts under which the Government acquires technical data and computer software must identify the software and technical data requirements and must contain a "rights in computer software and technical data clause." The computer software and technical data requirements of a contract appear on the DD Form 1423, "Contractor Data Requirements List," and set forth the technical data and computer software that are actually required to be furnished by a contractor. The "computer software and data clause," on the other hand, is a special contract clause which defines the rights and obligations of the contracting parties with respect to such data and software and particularly the Government's right to use them.

Even though acquisition, preservation, and updating of computer software and data is an expensive process, it is general policy to acquire the computer software and technical data necessary to meet needs of the overall acquisition strategy. (See 2.5.1.2.) This strategy often requires acquisition of sufficient data to promote future competition.

DFARS 27.4; FAR 35.011;

6.5.5.3 Independent Research and Development (IR&D). FAR permits Defense contractors to charge some of their corporate research and development costs as overhead on Defense contracts. The amount to be allowed and the nature of the work to be pursued are negotiable. Work performed under this IR&D provision has, in the past, played a vital role in developing the technology base for future systems.

DODINST 3204.1; SECNAVINST 3900.40; FAR 31.205-18

6.5.6 Contracting for Research and Exploratory Development. By nature and definition, research and exploratory development involve effort to extend knowledge of nature's laws and of its useful applications. Since the end result normally cannot be foreseen, contracts for such work often call for the delivery of a specified level of effort rather than the achievement of a specified result (see 6.5.2 on types of contracts).

FAR 35.005(a), (b), (c)

6.5.6.1 Full disclosure policy. R&D contracts are required to contain clause that allow the Government to make contract results available to other Government agencies and the private sector, consistent with national security and data right specified in the contract.

FAR 35.010

6.5.6.2 Government equipment for universities and other nonprofit institutions. Government policy encourages educational and nonprofit institutions to maintain a high level of effort in basic technologies to enhance our long-range scientific knowledge. Where equipment or facilities exceeding the Government's need are available for disposal, such items may be approved for retention by the educational and nonprofit institutions in accordance with existent disposal regulations. Similarly, the Government encourages the transfer of title to equipment purchased with contract funds to educational institutions.

DODDIR 3210.2; FAR 35.014(b)

6.6 ACQUISITION OF R&D VIA COMPETITIVE PROPOSALS

The method of full and open competition most widely used in acquiring R&D is probably "competitive proposals" (see 6.3.4). The following paragraphs describe the key elements in the competitive proposals process.

6.6.1 Procurement Request (PR). The procurement request (PR) is a document prepared by the Technical Customer to initiate the contracting process. Ideally, the PR should provide a complete and technically adequate statement of what is required, which can be used first in the solicitation document (RFP/RFQ) (6.6.2), and later in the contract work statement (6.5.4). Assistance is generally available from the contracts group to help the Technical Customer prepare this all-important document.

Normally, the PR is extensively coordinated and reviewed before approval for initiation of the contract action since it is the basis for the commitment of funds. It certifies that the necessary funds are available and have been reserved for the proposed contract.

6.6.2 Solicitation Documents. The solicitation document which advises prospective performers of Government needs is termed a Request for Proposals (RFP) or a Request for Quotation (RFQ). The technical difference between the

two is that the RFQ is used when bilateral negotiation will be conducted before a binding contract will exist. For the RFP, however, the Government reserves the option to award the contract on the basis of the proposal without further negotiation. Primary responsibility for preparation of the RFP/RFQ and associated information, which is collectively termed the "bid package," rests with the Contracting Officer.

The technical heart of the solicitation document is the prospective work statement from the PR which should provide the prospective contractor with a comprehensive insight into the technical factors, criteria, and/or problems which he should consider in preparing his proposal and which the Government will use in proposal evaluation. It is essential that this part of the PR be comprehensive and clear in order to ensure that all contractors solicited have a common understanding of the requirement and the proposed method of evaluation.

6.6.3 Promulgation of Solicitation Documents. In general, the RFP/RFQ is sent to all organizations known to have the requisite capabilities. Bidders Mailing Lists are maintained by the purchasing activities. In addition, the Technical Customer indicates on the PR organizations known to have the technical capabilities required to carry out the development.

Since proposals may be both costly and wasteful of scientific and engineering manpower, FAR 35.007(a) limits initial solicitation to sources judged to have the basic technical qualifications to perform research or development in the specified field. The solicitation is also synopsized in the Department of Commerce publication, the *Commerce Business Daily*. Firms learning of the solicitation through the Commerce Daily may also request an RFP/RFQ.

A presolicitation conference may be held with potential contractors prior to promulgation of the RFP/RFQ to clarify any questions concerning the proposed contract and to elicit the interest of prospective contractors to participate.

The information in the bid package may be supplemented by a "bidders conference." This is a meeting of prospective bidders arranged by the

Contracting Officer to answer questions of prospective bidders and generally assist them in understanding the Government's requirements.

FAR Part 5, 35.004, 35.007(a) and (b)

6.6.4 Evaluation of Proposals and Bidders. Evaluation leading to selection of the performer encompasses both proposals and a large number of other factors affecting the ability to perform. While most of the "other factors" fall within the province of the Contracting Officer, the Technical Customer will play a major role in judging the probable ability of the bidders to perform technically.

In determining the capability of prospective contractors, the following may be considered:

- The contractor's understanding of the scope of the work as shown by the technical approach proposed.
- The availability and competence of experienced engineering, scientific, or other technical personnel.
- The availability, from any source, of necessary research, test, and production facilities and the contractor's willingness to invest in production tooling and test equipment.
- Experience or pertinent novel ideas in the specific branch of science or technology involved.
- The contractor's willingness to devote his resources to the proposed work with appropriate diligence.
- The contractor's management capabilities, cost controls, and record of past performance.

DODDIR 4105.62 (NAVMAT 4200.49); SECNAVINST 4210.6; NAVMATINST 4200.49; (or superseding SECNAVINST); FAR 35.008

6.6.5 Source Selection. The basis for the award of Defense contracts is the same, regardless of the method of acquisition, type of contract, or nature of the task. What is sought is a contract most advantageous to the Government, price and other factors considered. FAR makes it clear that in awarding R&D contracts, basic policy should be interpreted to favor award "to that organization, including any educational institution, that proposes the best ideas or concepts and has the highest competence in the specific fields of science or technology involved." (FAR 35.008(a).) Cost must be taken into consideration, not only to determine reasonableness, but also to determine understanding of the project, perception of risks, and ability to organize and perform the work. (FAR 35.008(e).)

DODDIRS 4105.62 (NAVMAT 4200.49); NAVMATINST 4200.49 (or superseding SECNAVINST); FAR 35.008

6.6.6 The Broad Agency Announcement Technique. An alternative competitive technique, widely used for basic research, is the broad agency announcement described under "Other Competitive Procedures" in FAR 6.102(d)(2). It involves issuance of an announcement, identifying areas of research interest, listing the criteria to be used in the selection process, and soliciting participation of all capable offerors.

Proposals received in response to the announcement are subjected to a peer or scientific review and winning proposals are selected and funded in accordance with agency procedures. Resultant awards are counted as full and open competition.

6.7 MANAGEMENT ACTIVITIES DURING EXECUTION

This section covers monitoring, reporting, inspections, acceptance of products, and other functions related to the execution of R&D effort, particularly that performed under contract.

6.7.1 Management Control Systems. The contractor is responsible for timely and satisfactory

performance of his contract. At the same time, however, the Government monitors contract performance to ensure that the desired results are accomplished as scheduled.

The general policy is that management control information should be generated from data actually utilized by contractor operating personnel and provided in summarized form for successively higher level management and monitoring requirements. Contractor management information/ program control systems and reports should be utilized as much as practicable. Government-imposed changes to contractor systems should be limited to those necessary to satisfy established DOD-wide standards.

The management control system (reporting) requirements which can be contractually imposed are limited to those systems listed in the current edition of DOD Manual 7000.6-M, "Acquisition Management Systems and Data requirements Control List (AMSDL)."

The Manual has two listings: general application for use throughout DOD, and restricted application with various constraints on use. The Manual also advises the user how to select management systems from the lists to be included on the solicitation document and then, after contractor response, how to "tailor" requirements to meet the particular needs of a specific contract.

Requirements for acquisition management systems to be imposed on the contractor must be specified in the RFP and contract. These requirements must be listed on a DD Form 1660, "Management Systems Summary List," which is a part of planning documents, solicitations, and final contract. This form indicates the "tailoring," if any; provides a cross reference to sections of the contract where the "tailoring" is described; and, for deliverable data, cites appropriate Data Item Descriptions (DIDs) contained on DD Form 1423, "Contract Data Requirements List." In other words, there are constraints upon Navy acquisition managers both in the management systems that may be imposed and the data the contractor may be required to submit based on such systems.

The general intent of the policies is to keep down the cost of monitoring and reporting by limiting management control systems to those actually essential to fulfilling true Government needs.

DOD Instruction 7000.2, "Performance Measurement for Selected Acquisitions," is a general application system listed in the AMSL Manual which may be imposed on selected contracts for major programs. Implementation involves evaluation of a contractor's management control system and demonstration of the internal systems against criteria contained in DOD Instruction 7000.2 and the Joint Service publication, *Cost/Schedule Control Systems Criteria (C/SCSC) Joint Implementation Guide* of 1 October 1976, NAVMAT P5240.

DODDIR 7750.5; DODINST 7000.2 (SECNAV 7000.17); SECNAVINST 7000.17; DOD 7000.6M, Acquisition Management Systems and Data Requirements Control List (AMSDL); NAVMAT P5240, Cost/Schedule Control Systems Criteria Joint Implementation Guide; DFARS 7.105, 16.402-2, 34.005-70, 52.232-7000, 52.232-7001

6.7.2 Technical Reports. Scientific and technical reports are documents written for the permanent record to document results of R&D effort. A completed DD Form 1473, "Report Documentation Page," must be included in each copy of a scientific or technical report required by a contract. Copies of all technical reports are furnished to the Defense Technical Information Center (DTIC) (see Appendix D for additional information on DTIC).

DODDIR 5230.24; SECNAVINST 3900.29; MIL-STD 847A (SECNAVINST 3900.29); FAR 35.010(b); DFARS 35.010

6.7.3 Progress Reports. Standard contract provisions require the contractor to submit reports on the status and results of all his work. As a

rule the contract defines a detailed reporting policy. Monthly reports in the form of letters are often required. Information submitted may include:

- The number and names of key personnel working on the project.
- Facilities used.
- Direction of the work.
- Experiments being conducted.
- The latest work done—scientific data, observations, predictions, and plans.
- Financial information.

6.7.4 Cost Reports. Three systems of cost reporting are available, each is addressed to a distinctive need and user. For all three systems, costs are reported against the standard work breakdown structures (WBS) prescribed in MIL-STD-881.

6.7.4.1 Cost Performance Report (CPR). The CPR is designed to provide the Program Manager a means of collecting summary level cost and schedule performance data. It is required for contracts, other than firm fixed-price, with a value of at least \$40 million RDT&E or \$160 million production.

DODINST 7000.10 (SECNAV 7000.15); SECNAV-INST 7000.15

6.7.4.2 Contractor Cost Data Reporting (CCDR). Contractor Cost Data Reporting provides a consistent, uniform historical cost data base for:

- Preparing independent cost estimates for major weapon systems acquisitions to be reviewed by the Joint Requirements and Management Board (JRMB).
- Developing cost estimates in support of analysis and contract negotiations.

- Tracking contractor's negotiated costs.

Through the use of standard definitions, standard WBS, uniform reporting, and a cost exchange system, the data collected provide a common data base for cost estimating within the DOD. CCDR is mandatory for all new major programs and acquisitions.

DODDIR 7000.11 (SECNAV 7000.20); SECNAV-INST 7000.20; NAVMAT P-5241, Contractor Cost Data Reporting (CCDR)

6.7.4.3 Contract Funds Status Report (CFSR). The Contract Funds Status Report supplies funding data that, along with other performance measurement inputs, provide DOD management with information to assist in:

- Updating and forecasting contract fund requirements.
- Planning and decision-making on funding changes.
- Developing fund requirements and budget estimates in support of approved programs.
- Determining available funds in excess of contract needs.

CFSR is an optional procedure and is normally applicable to all contracts of over \$500,000 in value.

DODINST 7000.10 (SECNAV 7000.15); SECNAV-INST 7000.15

6.7.5 Administration of Contracts. Responsibility for administration of contracts is usually delegated to a contract administration office upon award. These offices include those established by the Defense Contract Administration Service (DCAS) of the DOD Defense Logistics Agency, and those established by the military departments under the DOD Plant Cognizance Program.

The services they provide include contract administration, production and quality assurance, data and financial management activities (and administration of the industrial security program), contract compliance, and access to small business/labor surplus area firms.

The Project Manager of a major project or of one meeting DODDIR 5000.1 dollar thresholds is required to have representation at or near the contractor's site. This representation may take the form of technical representatives assigned to existing DCAS offices or Contract Administration Offices of other Services.

The handbook, *DOD Directory of Contract Administration Services Components*, (DOD 4109.59-H), provides a list of DOD components performing contract administration services.

DOD 4105.59-H; DODINST 4105.64

6.7.6 Selected Acquisition Report (SAR). The SAR is a standard, comprehensive, summary status report on major acquisitions. The report was developed to meet the requirements of management within the DOD as well as the needs of Congressional review. Technical, schedule, and program acquisition cost sections are the heart of the SAR. These sections show current estimates compared with the planning and development estimates in the approved DCP. Reasons for variance are required and demonstrated performance must be reported in the technical section.

SARs are normally prepared only for projects designated by SECDEF as major acquisitions, although others may be specifically selected by SECDEF for SAR treatment. SARs are prepared by the Program Manager for submission through the Service Secretary to the Secretary of Defense. SECDEF then forwards selected reports as requested by the Senate and House Armed Services and Appropriations Committees for information. The General Accounting Office also receives copies of the SARs.

DODINST 7000.3 (SECNAV 7700.5); SECNAV-INST 7700.5

6.7.7 Other Reports. Several other reports are submitted by the Technical Customer.

6.7.7.1 Research and Technology Work Unit Summary (DD Form 1498). DD 1498 is used to report ongoing effort at the work unit level. Each work unit report is updated when a significant change occurs as well as annually.

DODREG 3200.12-R-1; SECNAVINST 3900.32

6.7.7.2 RDT&E project listings. RDT&E project listings were discussed in Chapter 4 (see 4.2), "Preparation and Justification of the Budget." Project listings are prepared during each year to support the May POM submission to OSD; the July budget submission to the Navy Comptroller; the September budget submission to OSD/OMB; and in December to reflect the President's budget. An additional listing is prepared by ONR Comptroller in May in support of Apportionment Requests.

6.7.7.3 Reporting by laboratories/centers. Reporting by the laboratories and centers consists of inputs to the DOD Work Unit Information System (DD 1498) and project and financial status reporting as agreed to between the laboratory/center and the customer.

6.7.8 Changes and Amendments to Contracts. Contract modifications, as defined by FAR 43.101, means any written change in the terms of a contract. Changes must always be accomplished by the Contracting Officer.

6.8 EXECUTION OF MARINE CORPS R&D

MCOS P5000.10, 5000.15; NAVMATINST 3910.16A (or superseding OCNRINST)

6.8.1 Alternative Execution Means. Acquisition of R&D to meet Marine Corps needs can be accomplished in a number of ways:

- By direct acquisition of services from a contractor or another Service.

6.8.2

- By transferring funds to another Service and "buying" a percentage of the management of a development program which the other Service will conduct.
- By officially indicating interest in a development program which is totally funded by another service.
- By participation in a Joint Service Program.

The primary consideration determining the mode of acquisition is whether the end product is required by the landing forces in amphibious operations. If so, the development is a Marine Corps responsibility and will be funded and controlled by the Marine Corps, either directly by procurement of a contractor's services or indirectly by transferring funds to another Service. If the end product is not peculiar to the needs of the landing forces, another Service will be formally requested to initiate, or modify, a development program to satisfy requirements of both the Marine Corps and the sponsoring Service.

6.8.2 Program Cognizance within HQMC. Responsibility within Headquarters Marine Corps (HQMC) during the execution of R&D lies with each element of the HQMC staff organization. The office of the Deputy Chief of Staff (Research, Development and Studies) coordinates and integrates the conduct of implementing actions by the other staff elements. Additionally, DC/S (RD&S) serves as the official point of contact for R&D matters between HQMC and all agencies external to the Headquarters.

6.8.3 Management of Acquisition. The total development effort managed by the Marine Corps greatly exceeds the amount supported with Marine Corps RDT&E funds. For example, a program totally funded by the Army can be as vital to future Marine Corps capabilities as a program financed by the Marine Corps. In such a case, the Marine Corps devotes as much management attention to the former as to the latter.

6.8.4 Role of the Development Center. The Development Center of the Marine Corps

Development and Education Command is the primary field agency for the management of developmental efforts conducted on behalf of the Marine Corps. When such efforts are funded and controlled by the Marine Corps in execution of the Commandant's responsibility for the development of landing force weapons and equipments, or when the end product is being developed to satisfy a Marine-Corps-peculiar requirement, the Development Center's management role is active. When such efforts are conducted by another Service to satisfy requirements of both the Marine Corps and the sponsoring Service, the Development Center's management role principally involves monitoring developmental efforts to insure that Marine Corps requirements are satisfied and that any Marine Corps funds invested are appropriately utilized.

6.8.5 Role of the Navy Laboratories. Navy laboratory support of Marine Corps R&D includes:

- Assistance in developing and updating the Marine Corps Long-Range Plan, Mid-Range Objective Plan, and the material objectives that flow from them.
- The identification of the development efforts (exploratory, advanced, engineering) and the technical requirements necessary to attain them.
- The formulation (in conjunction with the Marine Corps Development Center of the Marine Corps Development and Education Command) of tentative development programs to implement Marine Corps requirements.
- Acquisition of programs approved and funded to meet these requirements or the monitoring and providing of scientific/technical guidance on programs concerned with Marine Corps requirements but conducted by other Services.

6.9 PROGRAM MANAGEMENT

PMs are responsible to their Program Executive Officers (PEO) (see 1.4.7.2), and will be

held accountable, for successful implementation of their approved program.

PMs are responsible for ensuring that the program schedule and funding are consistent with the acquisition policies established in SECNAVINST 4210.6 on a continuing basis from inception through completion. These elements of program management are to be adjusted as necessary throughout the acquisition cycle. Such adjustments shall be reflected in documentation included in the PPBS process, decision-milestone

process (i.e., ARBs, NPDMs, JRMBs), and AP, and change PMP process.

Changes in approved programs must be kept firmly under control. Changes in baseline schedule, configuration, performance characteristics, or acquisition strategy which will increase funding requirements must be presented for review in accordance with the PMP process (see 3.3.14).

SECNAVINSTS 4210.6, 5000.33, 5420.188

SELECTED REFERENCES ON CONTRACTING AND EXECUTION OF R&D EFFORT

Federal Acquisition Regulation (FAR), Part 35, "Research and Development Contracting." (See 6.3.1)

DODDIR 4105.62; "Proposal Evaluation and Source Selection."

DODINST 7000.3 (SECNAV 7700.5), "Selected Acquisition Report (SAR)."

SECNAVINST 3900.37, "Rapid Development Capability for Warfare Systems; establishment of."

SECNAVINST 4210.6, "Acquisition Policy."

SECNAVINST 4210.7, "Effective Acquisition of Navy Material," promulgates policy on NDI.

NAVMATINST 3920.3C, (or superseding OCNRINST), "In-House Laboratory Independent Research (IR) and Independent Exploratory Development (IED) Programs."

NAVMATINST 5450.27C, (or superseding SPAWARINST), "CNM Command Laboratories and Centers; mission and functions of."

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The "Master Reference List" shows the version and issue data of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

CHAPTER 7 TEST AND EVALUATION

TABLE OF CONTENTS

7.1 General and Background	7-1
7.1.1 Nature of Test and Evaluation	7-1
7.1.2 Functions of T&E	7-1
7.1.2.1 Information for development	7-1
7.1.2.2 Information for acquisition milestone decisions	7-1
7.1.2.3 Information for effective operational utilization	7-2
7.1.3 Policy on T&E	7-2
7.1.4 T&E in the Acquisition Cycle	7-2
7.1.5 Congressional Interest in OT&E	7-2
7.1.6 Waiver of T&E Requirements	7-3
7.1.7 Approval for Production Milestones	7-3
7.1.7.1 Approval for Full Production (AFP)	7-3
7.1.7.2 Approval for Limited Production (ALP)	7-3
7.1.7.3 T&E for Non-Development Items (NDI)	7-3
7.2 Organization for Test and Evaluation	7-3
7.2.1 T&E Responsibilities in OSD	7-3
7.2.1.1 Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) (DUSDRE(T&E))	7-3
7.2.1.2 Director, Operational Test and Evaluation (DOT&E)	7-4
7.2.2 T&E Responsibilities at the SECNAV Level	7-4
7.2.3 T&E Responsibilities in OPNAV	7-4
7.2.4 Board of Inspection and Survey	7-5
7.2.5 Operational Test and Evaluation Force (OPTEVFOR)	7-5
7.2.6 T&E Focal Points/Coordinators	7-5
7.2.7 Program Managers (PMs)	7-5
7.2.8 T&E Coordinating Group (TECG)	7-6
7.2.9 T&E Responsibilities in the Marine Corps	7-6
7.2.9.1 Marine Corps Operational Testing and Evaluation Activity (MCOTEA)	7-6
7.2.9.2 Fleet Marine Forces (FME)	7-6
7.3 Test and Evaluation Resources	7-6

7.3.1	Capabilities of T&E Field Activities	7-6
7.3.2	Scheduling Use of Facilities	7-6
7.3.3	Obtaining New Facilities	7-7
7.3.4	Land-Based Test Sites (LBTS)	7-7
7.3.5	Major Range and Test Facility Base (MRTFB)	7-7
	7.3.5.1 Elements of the MRTFB	7-7
	7.3.5.2 Funding	7-8
7.3.6	Targets	7-8
7.3.7	RDT&E Support	7-8
	7.3.7.1 RDT&E support requirements	7-8
	7.3.7.2 Priorities for RDT&E support	7-8
	7.3.7.3 Scheduling RDT&E support	7-9
	7.3.7.4 OT&E Support for the Marine Corps	7-9
7.3.8	RDT&E Platform Resources	7-9
7.4	Types of T&E	7-9
7.4.1	Developmental Test and Evaluation (DT&E)	7-9
	7.4.1.1 DT-I	7-9
	7.4.1.2 DT-II	7-9
	7.4.1.2.1 Technical Evaluation (TECHEVAL)	7-9
	7.4.1.3 DT-III	7-10
	7.4.1.4 Production Acceptance T&E (PAT&E)	7-10
7.4.2	Operational Test and Evaluation (OT&E)	7-10
	7.4.2.1 OT-I	7-10
	7.4.2.1.1 LRIP Report	7-10
	7.4.2.2 OT-II	7-11
	7.4.2.3 OT-III	7-11
	7.4.2.4 OT-IV	7-11
7.4.3	Board of Inspection and Survey Acceptance Trials	7-11
7.4.4	Joint Service Programs	7-11
	7.4.4.1 Joint T&E (JT&E)	7-11
	7.4.4.2 Two-sided testing	7-11
	7.4.4.3 Multiservice I&E	7-12
	7.4.4.4 Funding of joint service programs	7-12
7.5	Planning for Test and Evaluation	7-12

7.5.1	Definition of Test Issues and Problems	7-12
7.5.2	Coordination with OPTEVFOR	7-12
7.5.3	Test and Evaluation Master Plan (TEMP)	7-13
7.5.4	Funding T&E	7-13
7.5.5	T&E Task Statements	7-13
7.5.6	Test Resource Planning	7-13
7.6	Flow of T&E-Based Information to Users	7-14
7.6.1	T&E Information for Developers	7-14
7.6.2	T&E Information for Program Managers	7-14
7.6.3	T&E Information for Milestone Decisions	7-14
7.6.4	T&E-Based Information for Operating Forces	7-14
7.6.5	T&E Information for the Board of Inspection and Survey	7-14
7.6.6	Formal T&E Reports and their Availability	7-14
7.7	Test and Evaluation of ILS	7-14
7.7.1	Requirements for ILS T&E	7-15
7.7.1.1	Operational Availability (Ao)	7-15
7.7.2	Timing of ILS T&E	7-15
7.7.3	Outputs of ILS T&E	7-15
7.7.4	Utilization of Results of ILS T&E	7-16
7.8	Test and Evaluation for Ship Acquisition	7-16
7.8.1	Policies and Principles	7-16
7.8.2	Ship Acquisition T&E Planning	7-17
7.8.3	Organization for Ship T&E	7-17
7.8.4	Acceptance of Ships	7-17
7.8.5	Certification of Ship Aviation Facilities	7-17

CHAPTER 7 TEST AND EVALUATION

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

This chapter deals with tests and the evaluation of resulting data, particularly those that are needed in order to provide information on which decisions related to the development or deployment of new weapons and equipment are based.

Navy research and development are discussed from the viewpoint of test and evaluation: policies, types of tests, facilities and resources, planning, execution, and utilization of results of test and evaluation (T&E).

7.1 GENERAL AND BACKGROUND

This section, which provides a general frame of reference for the rest of the chapter, covers the nature and purpose of test and evaluation and basic policy on T&E.

7.1.1 Nature of Test and Evaluation. While the terms "test" and "evaluation" are most often found together, they actually denote clearly distinguishable functions in the RDT&E process. "Test" denotes the actual testing of hardware/software—models, prototypes, production equipment, computer programs—to obtain data, including software, valuable in developing new capabilities, managing the process, or making decisions on the allocation of resources. "Evaluation" denotes the process whereby data are logically assembled and analyzed to aid in making systematic decisions.

Test and evaluation involve the deliberate and rational generation of data concerning the nature of the emerging system and the creation

of information useful to the technical and managerial personnel who control development. In the broad sense, T&E may be defined as all physical testing, experimentation, and analyses performed during the course of research, development, introduction and employment of a weapon system or subsystem, and all analytical or evaluate studies performed using the data generated.

7.1.2 Functions of T&E. Test and evaluation are integral to the development of systems and equipments. Testing provides information for a number of purposes and several different classes of information users. Tests provide information for the following purposes:

7.1.2.1 Information for development. Testing of systems under development is an inherent aspect of the R&D process through which technical uncertainties and problems, e.g., in reliability, are identified and resolved. While information on such problems is generated primarily through testing by the developer, various tests by the Government generate information useful in the design-test-evaluate-redesign process that is basic to the development of reliable material.

7.1.2.2 Information for acquisition milestone decisions. Many of the major milestone decisions in the life of a development, such as decisions to initiate development, to conduct full-scale development, or to procure a system for inventory, are by nature investment decisions. In making these decisions, the decision makers

(such as SECDEF where the Joint Requirements and Management Board (JRMB) is involved) are responsible for putting available resources to their most productive use. The issue in these milestone decisions is whether initiating, continuing, or committing additional resources to the acquisition will result in the most productive use of the required resources—money, material, personnel, etc. (see 2.5.4).

T&E must provide, as a basis for these decisions, the best information possible concerning the operational effectiveness, operational suitability (including reliability, operational supportability, organization, doctrine and tactics for system deployment), of the prospective system, its needs for modifications or further development, and data useful to management in estimating the probable cost of completing development, acquisition, and ownership.

7.1.2.3 Information for effective operational utilization. The operating forces constitute another set of users of information developed through test. One output of operational evaluation efforts is the development of tactics and doctrine for the most effective utilization of the system.

7.1.3 Policy on T&E. Basic policy calls for a development strategy based on periodic performance demonstrations. Programs are to be structured and resources allocated to ensure that the demonstration of actual achievement of program objectives is the pacing function.

A basic policy for tests that provide information for acquisition milestone decisions is the concept of the "independent evaluation." An organization with a vested interest in "selling" the system under development is not to have unilateral control of the establishment of test requirements, the conduct of tests, or evaluation of the results. The operating forces and the "buyer" of the system (for example, SECDEF for a major program) play a key role in determining test requirements and must, of course, have access to an independent evaluation of test results.

Assessment of operational effectiveness and suitability through initial operational test and

evaluation (IOT&E) *before* the major production decision is basic policy. This IOT&E must be an evaluation by the appropriate independent test organization: Operational Test and Evaluation Force (OPTEVFOR) or Marine Corps Operational Test and Evaluation Activity (MCOTEA).

The principle of independent evaluation has always been fundamental to Navy development procedures. Evaluation for operational effectiveness and suitability, including a recommendation for fleet introduction, is performed by OPTEVFOR. Acceptance trials of vessels are conducted by the Board of Inspection and Survey. Both organizations report to the Chief of Naval Operations for these purposes.

No new system or significant alteration to an existing system may be approved for production until it has been adequately tested and proved operationally effective and suitable (including logistical supportability).

DODDIRS 5000.1, 5000.3; DODINST 5000.2; SECNAVINST 5000.1; OPNAVINSTS 3960.10, 5000.42

7.1.4 T&E in the Acquisition Cycle. T&E is an integral part of the acquisition process, not something that occurs after the R&D is completed. T&E begins in the very earliest phase of RDT&E with experimental testing of scientific hypotheses and continues beyond completion of development where primary emphasis is on perfecting doctrine for the most effective employment of advanced weapons. The role of T&E throughout the acquisition process is shown in Figure 2-3.

DODDIR 5000.1, SECNAVINST 5000.1

7.1.5 Congressional Interest in OT&E. The general policy of adequate operational test and evaluation (OT&E) is strongly supported by the Congress. A provision of the Authorization Act of 1972 called for the submission of data on all OT&E completed on every system for which procurement funds are requested. This basic policy

has been incorporated in each subsequent Act. (See Appendix G, Section G1 for excerpts from applicable statutes.) Congress emphasized its continuing concern for adequate OT&E by including in the 1984 act a requirement for a Director of Operational Test and Evaluation (DOT&E) confirmed by the Senate and reporting directly to SECDEF (see 7.2.1.2).

7.1.6 Waiver of T&E Requirements. Although it can be done, obtaining waivers for T&E called for in approved plans has been purposely made difficult. Only the Secretary of Defense can grant waivers to T&E outlined in an approved SCP/DCP/TEMP.

DODDIR 5000.3; OPNAVINST 3960.10

7.1.7 Approval for Production Milestones. There may be several Milestone III, "Production," decisions, particularly for very costly programs.

*OPNAVINST 5000.42; NAVMATINST 5000.19E
(or superseding OPNAVINST)*

7.1.7.1 Approval for Full Production (AFP). AFP signifies that:

- The system has demonstrated, through TECHEVAL, the meeting of its technical thresholds.
- The system has demonstrated, through OPEVAL, both the meeting of operational thresholds and its operational effectiveness and operational suitability.
- The system has demonstrated, through ILS audit, that support planning is satisfactory.
- No additional development work or corrective action is required.

7.1.7.2 Approval for Limited Production (ALP). ALP signifies that all but a specific set of requirements for AFP have been met and that

a plan and funding exists for meeting those requirements prior to the next year's production decision point.

7.1.7.3 T&E for Non-Development Items (NDI). The use of an NDI solution will be considered, as a matter of policy, as a part of or instead of a customary R&D effort. In describing any NDI to be considered, the advocate will describe T&E, if any, to be conducted.

SECNAVINST 4210.7

7.2 ORGANIZATION FOR TEST AND EVALUATION

This section discusses the T&E responsibilities of officials and of some organizations with major roles in test and evaluation. More detailed information on this subject can be found in Appendix G.

7.2.1 T&E Responsibilities in OSD. T&E responsibilities in OSD are divided between the Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) and the Director, Operational Test and Evaluation.

DODDIR 5000.3

7.2.1.1 Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) (DUSDRE(T&E)). DUSDRE(T&E) serves as the principal staff assistant and advisor to USDRE on T&E within DOD. His responsibilities include:

- Responsibility and authority for all DT&E conducted within DOD, including designating RDT&E programs as major for DT&E oversight. Provides advice and recommendations to SECDEF and guidance and consultation to Component Heads
- Serving as OSD focal point for review, coordination, and approval of TEMPs.

DUSDRE(T&E) and DOT&E are approval authorities for all DOD major program TEMPs

- Monitoring and reviewing RDT&E to ensure adherence to policy, guidance, and standards
- Providing to the DAE and JRMB principals at each formal review of a major system, a technical assessment of T&E conducted by DOD Components
- Review and comment to the DAE and JRMB principals on major program documents
- Designating observers as required to be present at DT&E activities
- Oversight of the DOD Major Range and Test Facility Base (MRTFB) (see 7.3.5) and development of test resources.

7.2.1.2 Director, Operational Test and Evaluation (DOT&E). DOT&E serves as the principal staff assistant and advisor to the Secretary of Defense on OT&E and is the principal OT&E official within DOD. His focal point responsibilities include:

- Monitoring and reviewing all OT&E within DOD
- Designating observers to be present during preparation for and conduct of the testing portion of OT&E
- Coordinating JOT&E conducted by more than one Military Department or Defense Agency
- Analyzing the results of OT&E. For major systems and DOT&E oversight programs, reporting to SECDEF and the Armed Services and Appropriations Committees of Congress that OT&E:
 - is adequate and
 - confirms effectiveness and suitability for combat of systems tested.

- Making recommendations to SECDEF on all budgetary and financial matters pertaining to OT&E, including the facilities and equipment
- Approving OT&E plans for major defense acquisition programs and DOT&E oversight programs.

DODDIRS 5000.3, 5141.2

7.2.2 T&E Responsibilities at the SECNAV Level. The Secretary of the Navy, as head of the Department of the Navy under the direction of the Secretary of Defense, is responsible for the policies and control of the Navy, including weapon systems acquisition programs. SECNAV assigns general and specific RDT&E responsibilities to the Assistant Secretary of the Navy (Research, Engineering, and Systems) and to the Chief of Naval Operations.

DODDIR 5100.1 (SECNAV 5410.85); SECNAVINST 5430.7

7.2.3 T&E Responsibilities in OPNAV. The CNO has responsibility for ensuring the adequacy of the Navy's overall test and evaluation program. T&E policy and guidance are exercised through the Director RD&A (OP-098) in accordance with overall policies of the Secretary of the Navy.

T&E staff support for the Director RD&A is provided by the Test and Evaluation Division (OP-983).

OP-983 is responsible for implementing the responsibilities of the Director RD&A with respect to cognizance over planning, conducting, and reporting of all test and evaluation associated with development of systems and equipment. OP-983 also acts as the Resource Sponsor for Navy MRTFB components to ensure adequate range support of RDT&E projects.

OPNAVINSTS 3960.10, 5430.48

7.2.4 Board of Inspection and Survey. The Board of Inspection and Survey—"BIS" to the aviation community, "INSURV" in ship circles—conducts acceptance trials of vessels and aircraft as directed by the Chief of Naval Operations. The INSURV also conducts material inspections of vessels, surveys of vessels, and such other inspections and trials of naval vessels and aircraft as may be directed by the CNO.

The Board of Inspection and Survey consists of a permanent president (PRESINSURV) and small permanent staff. This cadre is augmented by personnel and resources from other organizations for the conduct of particular trials. For example, in performing INSURV trials of aircraft, test pilots and other personnel are assigned additional duty to the Board of Inspection and Survey. The technical commands supply assistant inspectors for ship trials and inspections.

Article 0321, U.S. Navy Regulations, 1973; OPNAVINSTS 5420.70, 3960.10

7.2.5 Operational Test and Evaluation Force (OPTEVFOR). OPTEVFOR is the Navy's independent test agency responsible for initial and follow-on OT&E (see 7.4.2). Projects are assigned to OPTEVFOR by CNO. Results of OPTEVFOR evaluations are reported to CNO and SECNAV by COMOPTEVFOR and, when appropriate, to CMC.

With only a relatively modest number of personnel and resources on the east and west coast, COMOPTEVFOR relies heavily on the facilities, resources, and personnel of the operating forces, the DA, and field activities for carrying out his mission in T&E projects assigned. He exercises operational control over Fleet units assigned for project support. Close liaison is authorized and exercised with appropriate elements of the Systems Commands and other T&E organizations to facilitate test support and information flow in carrying out assigned projects.

Elements of OPTEVFOR are involved in varying degrees with all categories of RDT&E from basic research to evaluation of newly developed equipment and appraisal of systems

already in Service use. Projects deal with aircraft, surface ships, submarines, and antisubmarine warfare systems. Involvement in early phases of research and development includes inputs to the Test and Evaluation Master Plan (TEMP), observing development testing, and conducting those phases of operational testing necessary to provide CNO with an early and independent operational assessment.

OPNAVINSTS 5440.47, 3960.10

7.2.6 T&E Focal Points/Coordinators. Responsibility for coordination of T&E matters in the designated PMs, Systems Commands, and DON Centers rests with a T&E Focal Point, T&E Coordinator, or Assistant PM(T&E). Typical functions of the T&E Coordinator for a Systems Command include:

- Developing detailed information concerning availability of resources, timing and requirements of test programs, and T&E workloads at various commands
- Assisting in the preparation and review of the T&E portion of major planning documents
- Monitoring progress of test programs and recommending program readiness to proceed through successive phases of development
- Coordinating meetings on certification of readiness for OPEVAL, adjudication of internal systems problems, and internal TEMP review.

7.2.7 Program Managers (PMs). The PM is responsible for development and execution of an adequate T&E program. His T&E responsibilities include:

- Defining, in collaboration with the CNO Program Coordinator and COMOPTEVFOR, a test program which will illuminate test issues and problems (see 7.5.1)

- Preparing and updating the TEMP (see 7.5.3)
- Arranging for performance of required T&E.

OPNAVINST 3960.10

7.2.8 T&E Coordinating Group (TECG). Complex, multifaceted programs may require extensive T&E coordination. To assist in this, a T&E Coordinating Group may be established. The members of a TECG should be the Program Coordinator, the Development Coordinator, the Program or Acquisition Manager, the OPTEVFOR Operational Test Director, the Logistics Coordinator, and others as appropriate (such as a PRESINSURV representative for ship and aircraft programs). TECG recommendations will be considered for inclusion in the TEMP.

OPNAVINST 3960.10

7.2.9 T&E Responsibilities in the Marine Corps. The CMC has responsibility for ensuring the adequacy of testing and evaluation of all systems to be acquired by the Marine Corps. T&E policy and guidance are exercised through the Deputy Chief of Staff for Research, Development, and Studies (DC/S RD&S), in accordance with overall policies of the Secretary of Defense and the Secretary of the Navy.

DODDIR 5000.1; SECNAVINST 5000.1

7.2.9.1 Marine Corps Operational Testing and Evaluation Activity (MCOTEA). As is the case with the other Services, operational testing, including IOT&E and FOT&E, must be conducted by a major field agency separated and distinct from both the using command and the command with development and/or procurement responsibilities. The Marine Corps Operational Test and Evaluation Activity (MCOTEA) performs this function for and reports the results of

its independent evaluation to the CMC. OT&E is conducted in phases appropriate to key decision points in the system acquisition process. MCOTEA is represented by a focal point for OT&E matters at Headquarters, Marine Corps in the RD&S Division

MCO 3960.2

7.2.9.2 Fleet Marine Forces (FMF). T&E responsibilities of FMF include conducting OT&E under the direction of MCOTEA, supporting DT&E in coordination with CG, MCDEC, and providing personnel or units to participate in joint T&E as assigned.

MCOs P5000.10, 5000.11

7.3 TEST AND EVALUATION RESOURCES

This section presents information on policy, organization, and responsibilities associated with the resources essential to accomplishment of T&E programs including the range and test facility base, field RDT&E support, new test capabilities, and facilities and targets.

7.3.1 Capabilities of T&E Field Activities. Personnel responsible for T&E programs can determine the capabilities of appropriate T&E activities by review of referenced publications and by conferring with such agencies as the OPNAV T&E Division (OP-983), the T&E/Fleet Support branch of the appropriate SYSCOM, PMs and other offices experienced in T&E matters.

RDT&E Center Management Briefs; NAVSEA Test and Range Facilities Catalog; Army Material Development and Readiness Command DARCOM 70-1, Army Test Facilities Register; Air Force Systems Command AFCEP-80-3, Air Force Test Facilities Register

7.3.2 Scheduling Use of Facilities. The key factor in obtaining use of test ranges and other facil-

ities is early contact with cognizant test facility personnel. Early liaison will assist in the definition of a practical test plan to be incorporated in the TEMP, and will allow the facility the leadtime required to provide the required support. Funding of such tests is discussed in paragraph 7.5.4.

DODDIR 3200.11 (OPNAV 3900.25); OPNAV-INST 3900.25; NAVMATINST 3960.6B (or superseding OPNAVINST)

7.3.3 Obtaining New Facilities. If the identification of T&E capabilities reveals that new facilities will be needed, extra long leadtimes may be necessary to obtain MILCON funding and to complete construction.

In keeping with the funding policy for T&E (see 7.5.4), MILCON expenditures may be considered part of the institutional share, chargeable to the T&E facility. This should be negotiated with the NAVAIR Assistant Commander for Test and Evaluation (AIR-06).

DODDIR 3200.11 (OPNAVINST 3900.25)

7.3.4 Land-Based Test Sites (LBTS). The complexity of modern systems and their attendant software and integration requirements have emphasized the value of LBTS to the development, integration, test, configuration management, and life-cycle support of many Navy systems. An LBTS is a facility duplicating or simulating as many conditions as possible of a system's planned operational installation and utilization.

Use of a LBTS must be justified based on cost-effectiveness and needed capability and must be approved by OP-098. It is intended that OT&E be carried out in an operational environ-

ment. Therefore, OT&E intended to support production decisions will be performed in the operational environment in preference to LBTS, except when otherwise directed by CNO.

OPNAVINST 3960.10; NAVMATINST 3960.8 (or superseding OPNAVINST)

7.3.5 Major Range and Test Facility Base (MRTFB). The mission of the MRTFB is to provide a broad range and test support base to all DOD components and other authorized users responsible for RDT&E and operation of material and weapon systems.

The MRTFB is composed of 19 DOD major ranges and test facilities, which are managed by the military departments and monitored for OSD by the Deputy Director (Test and Evaluation).

The Director Test and Evaluation Division (OP-983) is responsible for management of Navy elements of the MRTFB at the OPNAV level.

DODDIR 3200.11 (OPNAV 3900.25); OPNAV-INST 3900.25

7.3.5.1 Elements of the MRTFB. Each of the elements listed below is operated by one of the Services.

- Navy elements

Pacific Missile Test Center
Atlantic Undersea T&E Center
Naval Air Test Center
Naval Air Propulsion Center
Naval Weapons Center (T&E portion only)
Atlantic Fleet Weapons Training Facility

REMINDER. The Guide's function is to help the reader understand the overall system and identify sources of more detailed information. As ASN(R,E&S) stated in his Foreword, "The Guide ... cannot be cited as authority for official actions."

- Army elements

Yuma Proving Ground
 White Sands Missile Range
 Kwajalein Missile Range
 Electronics Proving Ground
 Dugway Proving Ground
 Aberdeen Proving Ground (Material
 Test Directorate only)

- Air Force elements

Space and Missile Test Center
 (Western Test Range)
 Space and Missile Test Center
 (Eastern Test Range)
 Arnold Engineering Development
 Center
 Tactical Fighter Weapons Center
 (Range Group only)
 Air Force Flight Test Center (includes
 Utah Test and Training Range)
 Armament Division
 4950th Test Wing

7.3.5.2 Funding. Most MRTFB activities operate under the DOD uniform funding policy, under which the user pays direct costs of services provided, while the T&E activity pays indirect costs. This is intended to insure that T&E is carried out at the best qualified activity, regardless of managing Service, by providing some cost uniformity among activities (see 7.5.4).

Liaison should be established early in the T&E program to establish the resource and schedule requirements to develop realistic cost estimates, including cost of new resources which may be user unique and, therefore, chargeable to the program.

7.3.6 Targets. The development, acquisition and management of aerial, surface, and seaborne (less underwater) targets for support of T&E and Fleet training programs are the responsibilities of NAVAIR APC 208. The development, acquisition and management of underwater targets are controlled by NAVSEA (SEA 6343).

7.3.7 RDT&E Support. RDT&E support encompasses the support provided by operational naval forces having a primary mission other than

R&D to the DA, COMOPTEVFOR, PRESIN-SURV, or an R&D agency. There are three types of RDT&E support: *dedicated* support precludes employment of the supporting unit in other missions; *concurrent* support permits employment of the supporting unit in activities other than RDT&E support, but will have an operational impact upon the unit's employment; and *NIB* (not-to-interfere basis) support permits employment of the supporting unit without interference from the RDT&E effort.

OPNAVINST 3960.10

7.3.7.1 RDT&E support requirements.

RDT&E support requirements are compiled from two inputs:

- Approved TEMPs (see 7.5.3)
- Requests for RDT&E support for research and development not related to specific acquisition programs.

From these two inputs, CNO (OP-098) compiles and publishes, annually, "CNO Long-Range RDT&E Support Requirements" for the budget-and out-years. Fleet commanders use this report for guidance in planning, programming, and budgeting for RDT&E support.

Using these same two inputs, updated by confirmation procedures, CNO (OP-098) compiles and publishes, quarterly, "CNO Quarterly RDT&E Support Requirements" for the forthcoming quarter. This summary is used as a tool in the quarterly Fleet scheduling conferences.

7.3.7.2 Priorities for RDT&E support.

CNO (OP-098) assigns a priority (applying to Fleet support only) to each RDT&E support task listed in the "CNO Quarterly RDT&E Support Requirements."

- Priority ONE support tasks take precedence over normal Fleet operations
- Priority TWO support tasks take precedence with normal Fleet operations

- Priority THREE support tasks take precedence after normal Fleet operations.

7.3.7.3 Scheduling RDT&E support.

Fleet commanders-in-chief schedule support tasks listed in the "CNO Quarterly RDT&E Support Requirements" in accordance with assigned priorities. COMOPTEVFOR coordinates RDT&E support scheduling for CNO and reports to CNO, quarterly, the RDT&E support provided.

7.3.7.4 OT&E Support for the Marine Corps. The Marine Corps requests desired OPTEVFOR OT&E support from CNO, who then gives appropriate direction to COMOPTEVFOR. When such support is provided, OT&E planning is coordinated with CMC, and COMOPTEVFOR reports his independent evaluation to CMC and CNO. OT&E planning for all Navy programs that have USMC application includes MCOTEA coordination, and MCOTEA is provided program documentation, test plans, and reports.

7.3.8 RDT&E Platform Resources. These resources include ships and aircraft that are dedicated to acquisition and nonacquisition programs, i.e., Research (6.1) or Exploratory Development (6.2). Ship assets are managed and supported by NAVSEA (SEA-05R12); the aircraft assets by the NAVAIR RDT&E Aircraft Inventory Branch (AIR-4213).

7.4 TYPES OF T&E

The Navy classifies tests into 2 official categories: Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). Production Acceptance Test and Evaluation (PAT&E) is a specific type of DT&E. Figure 2-3 shows graphically the relationship between various tests and phases of the acquisition process.

Each OSD category of test has types or subcategories of test that are used by the Navy depending on the equipment or hardware. The following paragraphs describe the general types of tests and give some examples of specific tests that are peculiar to specific types of equipment; i.e., aircraft, ship, etc.

DODDIR 5000.3; OPNAVINST 3960.10

7.4.1 Developmental Test and Evaluation (DT&E). DT&E is that test and evaluation conducted to:

- Demonstrate that the engineering design and development processes are complete
- Demonstrate that design risks have been minimized
- Demonstrate that the system will meet specifications
- Estimate the system's military utility when introduced.

DT&E is required for all acquisition programs. It is planned by, conducted for or by, and monitored by the Developing Agency (DA). The specific objectives of each phase are developed by the DA and published in the TEMP.

DT&E is conducted in three major phases. Each phase may be divided into subphases (e.g., DT-III A, DT-III B) if necessary.

7.4.1.1 DT-I. DT-I is DT&E conducted during the demonstration and validation (D&V) phase to support the Milestone II decision that considers entry into full-scale engineering development (FSED). Its principal purpose is to demonstrate: that all technical risk areas have been identified and reduced to acceptable levels; that the best technical approaches have been selected; and that, from this point on, engineering (rather than experimental) effort is required; and the technology needed is in hand.

7.4.1.2 DT-II. DT-II is DT&E conducted during the full-scale development phase to support the production and deployment (Milestone III) decision. (This decision is the first decision to produce systems for permanent installation in Fleet units or for inventory (see 2.5.4.4)). It demonstrates that the design meets its specifications in performance, reliability, maintainability, availability, logistics supportability, compatibility, interoperability, survivability, *vulnerability*, safety, human factors, and the total spectrum of electromagnetic environmental effects.

7.4.1.2.1 Technical Evaluation (TECHEVAL). The final subphase of DT-II is

7.4.1.3

TECHEVAL. A TECHEVAL is conducted, *with production-representative hardware and software*, to determine whether the system is functioning in a technically acceptable manner, whether it meets design and technical performance specification, and if it is technically and logistically ready for Operational Evaluation (OPEVAL). The Developing Agency is responsible for planning the test program and obtaining results of tests.

Following TECHEVAL, the DA certifies to CNO readiness for OPEVAL. However, OPEVAL may not commence until CNO accepts the DA's certification of readiness for OPEVAL in accordance with procedures outlined in OPNAVINST 3960.10. CNO then directs COMOPTEVFOR to commence OPEVAL.

7.4.1.3 DT-III. DT-III is DT&E conducted after the production and deployment decision to verify that product improvements, or correction of design deficiencies discovered during TECHEVAL, OPEVAL, FOT&E, or Fleet employment, are effective. For aircraft programs, the final phase of DT-III, employing production aircraft, is conducted by INSURV. Aircraft DT-III should be done as early as possible, preferably prior to initial operational capability (IOC).

7.4.1.4 Production Acceptance T&E (PAT&E). PAT&E is defined as that testing conducted on production items to demonstrate that systems meet contract specifications and requirements. Most PAT&E is the responsibility of the DA. However, acceptance trials of new construction or major conversion ships are the responsibility of PRESINSURV. The specific objectives of PAT&E are published in the TEMP.

7.4.2 Operational Test and Evaluation (OT&E). OT&E is conducted to estimate a system's operational effectiveness and operational suitability, identify the need for modifications, and provide information on tactics. OT&E has three distinguishing characteristics: It is conducted in as realistic an operational environment as possible; it is conducted using typical fleet-type personnel for operation and maintenance; and it is conducted against a simulated enemy, employing countermeasures.

OT&E is subdivided into two major categories: initial OT&E (IOT&E), which is all OT&E prior to the full production and fleet introduction decision; and follow-on OT&E (FOT&E), which is all OT&E after the production and fleet introduction decision. OT&E is also divided into four major phases (two IOT&E and two FOT&E) and may be further divided into subphases (e.g. OT-IIA, OT-IIB) if necessary.

The Navy is required to have one organization, separate and distinct from the developing and procuring command, and from the using command, which will be responsible for all OT&E. The organization is the Operational Test and Evaluation Force (OPTEVFOR). OT&E is planned and conducted by COMOPTEVFOR who subsequently reports results direct to CNO.

OPNAVINST 3960.10; DODDIRS 5000.1, 5000.3

7.4.2.1 OT-I. OT-I is that IOT&E conducted during the validation phase to support the full-scale development decision. The objectives of OT-I are to provide an early assessment as to whether the system's potential operational effectiveness justifies continuation of development and to provide operational information on system characteristics.

OT-I is not required for most programs. It is scheduled only for systems using new operational concepts or which involve significant operational risks. In a major system development, if Milestone II includes decisions to commit procurement funds for long-lead items or Low Rate Initial Production (LRIP), the DOT&E must provide the DAE and the JRMB principals an assessment of system operational effectiveness and suitability, based on operational testing, if any.

7.4.2.1.1 LRIP Report. The LRIP Report, documents the Director OT&E's assessment of the adequacy of OT&E and the effectiveness and suitability of a weapon system for combat. It is provided to SECDEF for combat. It is provided to SECDEF and the Congress. The LRIP Report must be received by cognizant congressional committees prior to a SECDEF

decision to proceed beyond low-rate initial production for any major system.

DODDIRS 5000.1, 5000.3; OPNAVINST 5000.42

7.4.2.2 OT-II. OT-II is that IOT&E conducted during the full-scale development phase to support the production and Fleet introduction decision. OPEVAL is the final subphase of OT-II. Specific OT-II objectives include demonstration of the achievement of program objectives for operational effectiveness and operational suitability, and initiation or continuation of tactics development. OPEVAL is conducted using production-representative hardware and begins no sooner than one month after TECHEVAL testing.

7.4.2.3 OT-III. OT-III is that FOT&E conducted after the production and fleet introduction decision. Normally, OT-III is conducted with the same preproduction prototype or pilot production systems used in OPEVAL. Specific OT-III objectives include testing of fixes to be incorporated in production systems, completion of any deferred or incomplete IOT&E, continuing tactics development, assessment of operational availability, assessment of the system in different platform applications, and for block revisions to a system's software to verify sustained, improved software performance.

For ship acquisition programs, OT-III is conducted with the lead ship during the period from delivery to the start of post-shakedown availability (PSA).

7.4.2.4 OT-IV. OT-IV is that FOT&E conducted on production systems. An initial objective of OT-IV is demonstration of the achievement of program objectives for production system operational effectiveness and operational suitability (especially reliability, maintainability, and logistic supportability). Other OT-IV objectives include OT&E of the system in new environments, in new applications, or against new threats.

For ship acquisition programs, OT-IV is conducted with the lead ship or designated follow

ship after expiration of SCN funding authority to verify that critical deficiencies identified during previous T&E have been corrected and to complete FOT&E not accomplished in OT-III.

7.4.3 Board of Inspection and Survey Acceptance Trials. The Board of Inspection and Survey is responsible to the CNO for conducting acceptance trials of new ships prior to Navy acceptance from the contractor. They also monitor all DT&E testing of new model aircraft and conduct the final phase of DT-III testing.

Trials of ships are conducted to determine if they are suitable for their intended missions and if they have been constructed in accordance with contract specifications. After completion of acceptance trials, the Board documents material, performance, and design deficiencies found to exist and reports to the CNO its recommendation on the Navy's acceptance of the ship.

OPNAVINSTS 3960.10, 5420.70; INSURVINST 13100.1

7.4.4 Joint Service Programs. Joint Service programs involve two or more Services or agencies.

DODDIR 5000.3

7.4.4.1 Joint T&E (JT&E). Joint T&E programs are sponsored by OSD to obtain information required by Congress, OSD, Unified or Specified Commands, or DOD Components. They may be JDT&E, sponsored by USDRE(T&E), or JOT&E, sponsored by DOT&E, depending on their purpose. A lead service is selected to plan and conduct the test, with participation by other services as appropriate.

7.4.4.2 Two-sided testing. Two-sided operational testing involves testing one system against another in as realistic an environment as possible in a test situation. Such tests are structured to evaluate system performance and operational suitability under realistic two-sided opera-

tional conditions including free-play between offensive and defensive forces whenever possible.

7.4.4.3 Multiservice T&E. This is T&E conducted jointly by two or more Services for systems to be acquired by more than one Service, or for a Service's systems that have interfaces with equipment of another Service.

Multi-Service T&E is planned, conducted, and reported under the procedures of the lead Service (or agency).

7.4.4.4 Funding of joint service programs. Most costs of joint tests are paid from a special RDT&E appropriation, "Director of Test and Evaluation, Defense," which is administered by the Director, Defense Test and Evaluation, OUSDRE. Services pay the participation costs (O&M) for units/personnel involved.

DODDIR 5000.3; OPNAVINST 3960.10

7.5 PLANNING FOR TEST AND EVALUATION

Requirements for test and evaluation are central to the planning of RDT&E effort. TEMP's (see 7.5.3) must be organized around an orderly sequence of project milestone decisions and the associated tests and demonstrations that provide factual information inputs into those decisions (see discussion of basic T&E policy, paragraph 7.1.3). *Effective planning provides groundwork for the necessary T&E to ensure that the equipment is ready for test and that test resources required to conduct the tests are available when needed.*

Recognition of the need for adequate statistical planning, design, and evaluation of tests is essential to ensure meaningful results.

The most important single source of information useful in planning for T&E is early and close collaboration with personnel of the prospective testing organization(s). Informal contacts are generally encouraged.

DODINST 5000.2, DODDIR 5000.3; NAVMAT-INST 3960.6B (or superseding OPNAVINST); OPNAVINST 3960.10

Directives listed following the introduction to a section generally apply to all the following information in the section and are not repeated.

7.5.1 Definition of Test Issues and Problems.

Planning must provide for the identification and definition of the issues and problems to be attacked through various tests and evaluations. These issues and problems constitute "performance specifications" for the information to be produced through the T&E process. Thus, a primary consideration in defining the information to be generated is a clear idea of the decisions to be made and other uses to which the information is to be put.

For major systems, the critical issues identified throughout the development period must be addressed in each DCP. The total test plan should be developed so that answers to the critical issues and questions required by decision milestones can be acquired in an efficient and timely manner.

The CNO Development and Program Coordinators, in collaboration with the Program Manager and COMOPTEVFOR, prepare the initial statement of issues and problems. This must be accomplished in time for use in the System Concept Paper (SCP) (see 2.5.5.1).

7.5.2 Coordination with OPTEVFOR. The Developing Agency (DA) is required to establish early and continuing liaison with COMOPTEVFOR to ensure that the DT&E program is fully understood and that OT&E requirements are identified and integrated into the program with proper budgeting. The DA is required to provide COMOPTEVFOR with all significant DT&E test data and analyses that will assist in planning or interpreting OT&E. COMOPTEVFOR is required to monitor all pertinent phases of DT&E.

7.5.3 Test and Evaluation Master Plan (TEMP). For each program in ACAT I, II, III, and IV, the TEMP is the controlling management document for T&E. For ACAT III and IV programs, the TEMP is the single document by which the program is controlled.

It is reviewed annually and about three months prior to JRMB or equivalent and is updated to reflect significant results achieved and changes to plans and milestones.

The TEMP is prepared by the Developing Agency (DA) in cooperation with COMOPTEVFOR (and PRESINSURV when appropriate). The DA is solely responsible for the DT&E and PAT&E sections and COMOPTEVFOR for the OT&E section. However, early and close coordination between the DA and OPTEVFOR is essential in the preparation of the DT&E section to ensure that the data obtained in such areas as reliability and maintainability are statistically useful in the OT&E phase.

The TEMP and revisions thereto are submitted by the DA through the Program Sponsor (DCNO/DMSO) to OP-098 for approval. Where higher-level approval is required—USDRE for ACAT I, ASN(R,E&S) for ACAT IIS—OP-098 coordinates such approvals after approval by OP-098. A TEMP, approved by OSD or ASN(RE&S), is required with the SCP/DCP or NDCP prior to each milestone decision for ACAT I or IIS programs. DOT&E reviews all DOT&E oversight program TEMPs, and, in conjunction with USDRE(T&E), is the OSD approval authority for these TEMPs.

Approval of the TEMP (or TEMP revision) constitutes CNO direction to conduct the T&E program as defined, including the commitment of RDT&E support. Considerations for preparation of a Navy Training Plan (NTP) should be addressed in the TEMP. The NTP should be approved prior to certification of OPEVAL.

OPNAVINSTS 1500.8, 3960.10

7.5.4 Funding T&E. DOD has directed that certain DOD T&E activities adopt a uniform funding

policy. This policy requires customers to pay direct range costs for their test programs, while the test facility pays indirect and overhead costs with funds provided by its parent Service.

The objective of DOD's policy is to provide greater visibility for the T&E program, to increase cost comparability among the various T&E activities, and to reduce cost biases in the placement of T&E work.

In keeping with DOD policy, funds for the development of certain new facilities required to test a system (MILCON) may be considered part of the institutional share, chargeable to the T&E facility. This should be negotiated with the facility staff. On the other hand, new test equipments needed for a specific project may be considered part of the industrial share and chargeable to project funds.

A major portion of the cost of OPTEVFOR tests is paid by the units involved through Fleet Operation and Maintenance (O&M) funds. However, the project must pay a significant part.

When the time comes to execute tests, funds are transferred to the test activity based on the current estimates of probable costs. If costs run above estimates, more funds must be provided; if they run less, then the surplus is returned to the project.

The DA plans, programs, budgets, and funds the costs of most resources identified in the approved TEMP. OPNAVINST 3960.10 contains specific funding guidelines.

7.5.5 T&E Task Statements. Task statements are a means of communicating to technical and managerial test personnel what it is that is to be tested, specific questions to be answered through the planned tests, and any other data the test is to produce. Testing activities and the SYSCOMs usually have suggested or mandatory task statement formats to fit their own testing procedures and requirements. Specific information on these requirements can be acquired through preliminary liaison with test activity personnel.

7.5.6 Test Resource Planning. The TEMP contains a summary of the resources essential to

accomplishment of the test program such as test articles, test activities to be utilized, special facilities and instrumentation, test platforms, and fleet support services required to accomplish the T&E. Early identification and planning for these requirements is particularly important if new facilities requiring MILCON will be needed or resources such as new instrumentation or targets require development (see 7.3 for further discussion of T&E resources).

7.6 FLOW OF T&E-BASED INFORMATION TO USERS

This section covers the forms of information developed through T&E and its flow to users.

7.6.1 T&E Information for Developers. For T&E integral to the development process, development personnel are normally direct participants in tests and thus receive "instant feedback." They have little need for permanently documented information since changes in the evolving design will be made, based on test data, and then evaluated in other experimental tests as soon as possible. For some development tests formal technical reports are required.

7.6.2 T&E Information for Program Managers. Much of the T&E-based information flowing into decisions of the Program Manager will be based on personal contacts, telephone discussions with test personnel, and dispatches reporting the results of tests on a day-to-day basis. Perhaps the single most important route of information flow is direct observation of and participation in important tests by the Program Manager and his staff. Formal technical reports are usually required (see 7.6.6).

7.6.3 T&E Information for Milestone Decisions. The information input into major investment decisions (see 2.5.4) will be formal, documented, and based on extensive evaluation. In the evaluation process, information from tests will be integrated with information on other crucial factors such as the continuing need for the system.

7.6.4 T&E-Based Information for Operating Forces. An important product of tests, particu-

larly Operational Evaluation (see 7.4.2), will be doctrine and tactics for effective operation of the system. COMOPTEVFOR publishes this information as an OPTEVFOR Tactics Guide. Additional information appears in such publications as tactical manuals and NATOPS (Naval Air Training and Operating Procedures Standardization) manuals for the operation of aircraft. The results of T&E also flow to users through improvements in maintenance and support procedures, associated manuals and other technical information.

7.6.5 T&E Information for the Board of Inspection and Survey. Test activities performing Service Acceptance Tests for INSURV are required to submit test results in the form of formal technical reports to INSURV. These reports form the basis for INSURV's reports and recommendation to CNO and SECNAV.

7.6.6 Formal T&E Reports and their Availability. Formal reports of tests, other than development tests, are generally prepared and copies filed in the Defense Technical Information Center (DTIC). These reports are then available to all users with a need to know through normal DTIC distribution procedures (see D3, on DTIC).

7.7 TEST AND EVALUATION OF ILS

The basic method used by the Navy to ensure that a system or equipment can be supported in its intended environment is the Integrated Logistic Support (ILS) Planning System. This planning technique is geared to the development of a system that ensures that the hardware delivered to Fleet units can be supported. The support system addresses operational and maintenance support concepts and requirements and provides for the acquisition of the resources, e.g., personnel, data, spares, test equipment, and facilities needed to satisfy these requirements (see 2.6.1).

The effectiveness of support for a system must be demonstrated in as realistic an operating environment as possible and, where practical, using pilot or early production items. Where this is not possible, preproduction prototypes that are reasonably representative of future production designs will have to be employed.

SECNAVINST 5000.39; OPNAVINST 5000.49; NAVMATINSTS 3000.1A (or superseding SPAWARINST), 4000.20B (or superseding NAVAIRINST); DOD 4100.35G, Integrated Logistic Planning Guide for DOD Systems and Equipment

7.7.1 Requirements for ILS T&E. ILS planning and products are subject to T&E just as is hardware. Operational availability (Ao) goals are established for all systems and equipments and documented in the TEMP. Objectives and criteria to assess the ability of the support system to support achievement of Ao goals are also established and documented in TEMPs. The ILS Manager (ILSM) helps set these objectives and criteria. The ILSM also ensures adequate planning for logistic support of the test program.

7.7.1.1 Operational Availability (Ao).

Ao is the basic readiness requirement for a system or equipment. It is expressed as the single Ao threshold the system or equipment must meet both during OPEVAL at the end of development and subsequently in the fleet. Ao is the percentage of time the system should be available for use in its intended operational environment when needed. Ao is established by the OPNAV warfare program sponsor in the earliest acquisition documentation for a system or equipment.

Anticipating requirements to meet the projected threat, the OPNAV Program Sponsor analyzes and weighs performance characteristics, affordability, and supportability in calculating Ao. Ao is the quantitative link between readiness objectives and supportability. The SYSCOMs design and acquire systems and equipments to meet the established Ao threshold, and COMOP-TEVFOR is responsible for assessing its attainment through appropriate OT&E.

7.7.2 Timing of ILS T&E. Logistic Support Test and Evaluation should be time-phased and in harmony with the hardware system test and evaluation program. Initially, analytical study of hardware design and configuration using drawing, breadboards, mockups, etc. should be employed to maintain surveillance over progress in achieving stated requirements. As design and fabrica-

tion progress, tests and demonstration on actual hardware should be employed to increasing levels. These should culminate in a formal pre-planned operational test and evaluation in which the production hardware and the operational and logistic support resources are utilized to validate the efficacy of the integrated logistic support planning process.

7.7.3 Outputs of ILS T&E. The test and evaluation of ILS is to:

- Determine the validity of the preventive maintenance concepts established
- Validate the accuracy and adequacy of operating and maintenance instructions and other job performance aids provided
- Validate the need and demonstrate the performance of support and test equipment for conducting operational and maintenance tasks
- Determine, with specified statistical confidence if possible, system reliability and maintainability against specified values
- Verify the need and adequacy of facilities (shipboard and shorebased) provided for operation and maintenance of the hardware system
- Validate the quantitative and qualitative operator and maintenance personnel levels and planned training
- Assess the credibility of the spares and repair parts allowances established for operational units
- Evaluate the effectiveness of special handling, transportation, and storage devices proposed for the hardware system
- Verify, with specified statistical confidence if possible, achievement of quantitative values specified, such as turnaround times, servicing rates, maintenance manhours per operating hour, rearming rate, and restoration times

- Assess qualitative values such as safety, human factors, environmental protection devices, accessibility, and interchangeability.

7.7.4 Utilization of Results of ILS T&E.

Results of the test and evaluation program shall be used to modify, as appropriate:

- Operational and maintenance data
- Facilities
- Support and test equipment requirements and allowances
- Spares and repair part allowances
- Facility (shipboard and shorebased) requirements and arrangements
- Unit manning documents
- ILS planning documents.

7.8 TEST AND EVALUATION FOR SHIP ACQUISITION

Ship acquisition, while subject to the same basic DOD and Navy T&E policies applied to other material procurements, is an area in which special T&E situations exist. The accomplishment of ship T&E varies considerably from the normal test cycle due to the lengthy design, engineering, and construction period for a major ship and because ship T&E includes not only that conducted on the ship platform itself, but also that conducted on the equipments and systems to be installed on the ship. From the RDT&E perspective, the ship T&E process is further prolonged when prototypes must be designed and constructed to test major technological advances in hull design or nonnuclear propulsion.

DODDIR 5000.3; OPNAVINSTS 3960.10, 4700.8; NAVSEAINST 3960.4; NAVSEA 0900-LP-095-2010, Ship Construction Tests and Trials Manual.

7.8.1 Policies and Principles. Because of the peculiarities described above, the following remarks apply to T&E for ship acquisition

Because the development/construction period for a major ship normally precludes completion of DT&E and IOT&E on the lead ship prior to the production decision for follow-on ships, successive phases of DT&E and IOT&E are accomplished as early as practicable to reduce risks and minimize the need for modification to follow-on ships.

The CNO will determine when a new ship class requires total ship OPEVAL. The CNO will also determine (1) when combat or propulsion system complexity warrants construction of land-based test sites, and (2) when technological advances in hull or propulsion design require prototyping.

DT&E and IOT&E prior to Milestone II generally consist only of T&E of the individual unproven shipboard systems and equipments. Such T&E, including validation of unproven shipboard test documentation, may be conducted on other ships or at land-based test sites.

For conventional ship acquisition programs (SCN-funded), DT&E and IOT&E between Milestones II and III consist of additional T&E of individual weapon systems, as well as T&E conducted at the land-based test site(s), if constructed. For prototype programs (RDT&E-funded), this DT&E and IOT&E also consist of T&E conducted on the lead ship itself.

For all classes of ships that require OT&E, continuing phases are accomplished on the lead ship at sea as early in the acquisition process as possible.

Ship Production Acceptance T&E must demonstrate that all systems are properly installed and operable in accordance with contract requirements and technical specifications. Because of the separation of milestones for delivery and operational readiness, and the segmented T&E periods that result, ship PAT&E is divided into two phases:

- The ship construction tests and trials phase includes all testing conducted on the ship during construction, including INSURV's Acceptance Trials; it may also include some earlier equipment PAT&E

(such as factory acceptance tests) if imposed as a prerequisite to shipboard installation. For this phase, the CNO requires the development and conduct of an Integrated Test Package (ITP). *The Ship Construction Tests and Trials Manual* establishes procedures and organizational responsibilities for ship construction testing.

- The ship post-delivery tests and trials phase includes the conventional tests and trials conducted on the ship from the time of ship delivery to the Navy up to and including INSURV's final contract trials and the post-shakedown availability. Post-delivery tests may include tactical trials, standardization trials, structural test firings, system qualification trials, and operational readiness tests.

FOT&E consists of post-delivery OT&E conducted on the lead ship of a ship class acquisition program.

7.8.2 Ship Acquisition T&E Planning. The extensive coordination needed to plan and execute T&E for the many systems and equipments involved in a ship acquisition program is effected through the program's T&E Coordinating Group (TECG).

The Ship Acquisition Program Manager (SHAPM) is the key NAVSEA representative for his respective TECG. He is responsible for developing, from OPNAV design requirements and his own risk analyses, definitive traceable test requirements necessary to demonstrate a progressive reduction of risk from initial factory T&E to land-based testing, ship construction tests and trials, and post-delivery tests and trials. To ensure effective planning and conformance to the T&E policies of higher authority, the SHAPM establishes early and continual liaison with OPTEVFOR and INSURV.

The TEMP developed for each ship acquisition program encompasses the T&E for all systems (combat, containment, mobility, and support) and equipments planned for the ship and sometimes for candidate alternative systems/equipments.

7.8.3 Organization for Ship T&E. Major participants in the planning and execution of ship T&E include:

- The Program Coordinator, who establishes the TECG for the ship formulation effort
- The T&E Coordinating Group (TECG), which establishes broad T&E requirements for a ship acquisition program and effects T&E coordination as described in 7.8.2
- The PM and/or SHAPM, who, in collaboration with OPTEVFOR, develops the TEMP and is the key NAVSEA representative for the TECG
- The Ship Design Manager, who is responsible to the SHAPM for production of the complete ship design, including test specifications
- COMOPTEVFOR, who participates in the T&E planning and conducts all OT&E.

7.8.4 Acceptance of Ships. Navy acceptance of a ship is based on the CNO's decision, contingent upon the satisfactory completion of INSURV Acceptance Trials as determined by PRESINSURV.

7.8.5 Certification of Ship Aviation Facilities. All aviation facilities in new and overhauled naval ships which operate aircraft must be inspected and certified as meeting approved standards of adequacy and safety established by the Chief of Naval Operations.

OPNAVINST 3120.28

SELECTED REFERENCES ON TEST AND EVALUATION

DODDIR 5000.3, "Test and Evaluation."

Shakedown Availability of U.S. Naval Ships
Undergoing Construction/Conversion/Modifica-
tion."

OPNAVINST 3960.10, "Test and Evaluation."

OPNAVINST 4700.8, "Trials, Acceptance, Com-
missioning, Fitting Out, and Shakedown and Post

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The Master Reference List shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

APPENDIX A
READINGS IN ACQUISITION MANAGEMENT

TABLE OF CONTENTS

A1	Excerpts from "Acquisition Organization and Procedures," Chapter 3 of A Quest for Excellence , Final Report of the President's Blue Ribbon Commission on Defense Management (Packard Report)	A-1
A2	Excerpts from Testimony by ASN(R,E&S) to the House Armed Services Committee 27 February 1986 on Department of the Navy Acquisition Policies and Practices	A-5
A3	Excerpts from SECNAVINST 4210.6 of 20 November 1985, "Acquisition Policy"	A-8
A4	Excerpts from the Summary of Major Provisions of the Goldwater-Nichols Department of Defense Reorganization Act of 1986 Released by the Senate Committee on Armed Services 11 September 1986	A11

APPENDIX A READINGS IN ACQUISITION MANAGEMENT

The readings in this new appendix are provided to help Guide users understand some of the forces and considerations underlying changes in the weapons acquisition process reported in this 10th edition or in process.

A1 EXCERPTS FROM "ACQUISITION ORGANIZATION AND PROCEDURES," CHAPTER 3 OF A QUEST FOR EXCELLENCE, FINAL REPORT OF THE PRESIDENT'S BLUE RIBBON COMMISSION ON DEFENSE MANAGEMENT (PACKARD COMMISSION)

A major task of this Commission has been to evaluate the defense acquisition system, to determine how it might be improved, and to recommend changes that can lead to the acquisition of military equipment with equal or greater performance but at lower cost and with less delay. For this purpose, the Commission formed an Acquisition Task Force.

• • • •

We compared the defense acquisition system with other systems, both government and commercial, that develop and produce equipment of comparable complexity, in order to find success stories that could provide a model on which reforms of the defense acquisition system could be based. Defense acquisition represents the largest and, in our judgment, the most important business enterprise in the world. It deserves to be managed with the highest standards. We therefore conducted a "search for excellence" by examining organizations that had been most successful in acquisition, in order to find a model of excellence for defense acquisition.

Chances for meaningful improvement will come not from more regulation but only with major institutional change. During the last decade or so a new theory of management has evolved. It has been developed by a limited number of U.S. companies, and it has flourished in Japan. These new management practices have resulted in much higher productivity and much higher quality in the products being produced. They involve the participation of all of the people in the organization in deciding among themselves how the job can best be done. They involve, above all, trust in people. They involve the belief that people in an organization want to do a good job, and that they will—if given the opportunity—all contribute their knowledge, skill, and enthusiasm to work together to achieve the aims and goals of their organization. Supervision can be minimized, and detailed review of work can be greatly reduced. A real sense of

teamwork can be established. Every group in an organization can become a center of excellence, and in this way the entire organization achieves a level of excellence in every aspect of its work.

Centers of excellence have evolved here and there in the acquisition process, in the form of project teams that have developed and produced new weapons rapidly, efficiently, and with high quality performance. Unfortunately, this is not the way DoD typically operates. All too many people in DoD work in an environment of far too many laws, regulations, and detailed instructions about how to do their work. Far too many inspectors and auditors check their work, and there is a hierarchy of oversight in far too many layers, requiring much wasteful reporting and paperwork.

The quest for excellence in defense management will be successful only if a new management philosophy can replace the old. Instead of concentrating on the things that are being done wrong and trying to fix them with more laws, more regulations, and more inspectors, DoD should concentrate on those things that are done right and use them as models.

....

All of our analysis leads us unequivocally to the conclusion that the defense Acquisition system has basic problems that must be corrected. These problems are deeply entrenched and have developed over several decades from an increasingly bureaucratic and overregulated process. As a result, all too many of our weapon systems cost too much, take too long to develop, and, by the time they are fielded, incorporate obsolete technology.

....

Although each of the cases we examined had its own peculiarities, we identified a number of problems that frequently recurred: for example, government insistence on rigid custom specifications for products, despite the commercial availability of adequate alternative items costing much less.

....

It is clear that major savings are possible in the development of weapon systems if DoD broadly emulates the acquisition procedures used in outstanding commercial programs. In a few programs, DoD has demonstrated that this can be done. The challenge is to extend the correct management techniques to all major defense acquisitions, and more widely realize the attendant benefits in schedule and costs.

....

It is fundamental that we establish unambiguous authority for overall acquisition policy, clear accountability for acquisition execution, and plain lines of command for those with program management responsibilities. It is also imperative that we streamline acquisition procedures. This can be facilitated by five related actions:

1. We strongly recommend creation by statute of the new position of Under Secretary of Defense (Acquisition).

....

2. The Army, Navy, and Air Force should each establish a comparable senior position filled by a top-level civilian Presidential appointee.

....

3. Each Service Acquisition Executive should appoint a number of Program Executive Officers.

Each Service Acquisition Executive should appoint a number of Program Executive Officers (PEO) who, like group general managers in industry, should be responsible for a reasonable and defined number of acquisition programs. Program managers for these programs should be responsible directly to their respective PEO and, on program matters, report *only* to him. In other words, every major program should be set up as a center of excellence and managed with modern techniques. The Defense Acquisition Executive should insure that no additional layers are inserted into this program chain of command.

....

We recommend a high priority on building and testing prototype systems to demonstrate that new technology can substantially improve military capability, and to provide a basis for realistic cost estimates prior to a full-scale development decision. Operational testing should begin early in advanced development, using prototype hardware. The early phase of R&D should employ extensive informal competition and use streamlined procurement processes.

....

Rather than relying on excessively rigid military specifications, DoD should make greater use of components, systems, and services available "off-the-shelf." It should develop new or custom-made items only when it has been established that those readily available are clearly inadequate to meet military requirements.

....

Federal law and DoD regulations should provide for substantially increased use of commercial-style competition, emphasizing quality and established performance as well as price.

....

The caliber of uniformed military personnel engaged in program management has improved significantly of late. Military officers manage over 90 percent of DoD's roughly 240 program offices. Their ranks range from 0-5 (lieutenant colonel/commander) to 0-8 (major general/rear admiral). Each of the Services has established a well-defined acquisition career program for its

officers. These include the Army's Materiel Acquisition Management (MAM) program, the Navy's Materiel Professional (MP) programs, and detailed career planning regulations for Air Force technical personnel and program managers. We strongly support these measures. We also support recent legislation that has further defined career paths for all program managers. In 1984, Congress established a minimum four-year tenure for program management assignments. The 1986 Authorization Act prescribed requisite qualifications and training, including at least eight years of acquisition-related experience and appropriate instruction at the Defense Systems Management College (or equivalent training).

A2 EXCERPTS FROM TESTIMONY BY ASN(R,E&S) TO THE HOUSE ARMED SERVICES COMMITTEE 27 FEBRUARY 1986 ON DEPARTMENT OF THE NAVY ACQUISITION POLICIES AND PRACTICES

Never since the days of Theodore Roosevelt have the Navy and Marine Corps exhibited such a strong consensus on the comprehensive strategy which now forms our naval planning for research and development. We have stopped chasing R&D rainbows. The FY 1987 request for RDT&E is \$10,586.8M, 10.2 percent of the Navy's total request. It represents the accomplishment of the pledge made five years ago to inject better management into our R&D programs; to increase funding when there is a high operational payoff at affordable cost; and to study ways to better mobilize America's industrial capability.

To insure that the Navy research and development base is managed cost effectively, the Navy has injected better management into our R&D programs by initiating a number of reforms in the acquisition process that affect both R&D and production. The success these initiatives have shown in reducing cost has gained them considerable Congressional support. I am thinking particularly of Senator Goldwater's hope that the other military services would follow the Navy's example, especially with regard to competition. These reforms are the product of five years' work, and resulted in a new acquisition policy issued last November.

The ultimate goal of the Navy acquisition process is to achieve improved performance and increased reliability at lower reasonable cost. We must begin this effort in R&D as it sets the stage for the entire procurement cycle. I believe we can do this through:

- greater use of competition
- earlier use of fixed-price contracts in the R&D cycle; and
- increased contractor investment.

Our new acquisition policy provides a better management tool for ensuring a controlled transition from development to production. We have already begun to see encouraging progress as a result of these measures.

We are also reemphasizing the role that our allies can play in contributing to our R&D efforts.

Let me describe our new policy to you. The development cycle of each program begins with a minimum of two contractors performing concurrent, but separate, development up to Full Scale Engineering Development (FSED). This pre-FSED period will include risk reduction, specification streamlining, and cost-capability tradeoff efforts. The objective of these activities is to clearly identify and eliminate those capabilities which provide only marginal military worth when compared to costs and risks.

At the beginning of the FSED period, the contractor field will be competitively narrowed to two contractors developing a system to one design. We will not continue to a Milestone II decision to proceed with FSED until we are satisfied that advanced development has reduced risk sufficiently to enable the contractors to commit to a fixed price type contract that includes not-to-exceed prices or priced production options. These provisions may be waived, however, when the urgency of the operational requirement for a given system dictates that we proceed with risks that would be considered excessive under normal circumstances.

The first limited production buy will be split between the contractors so that each will have the capability to compete equally for rate production.

Once production has been approved, contractors are expected to provide production tooling and test equipment, with the exception of acceptance test equipment, as well as those facilities required for program execution. Recovery of these investment costs will be accomplished through depreciation and program-related profit in a mutually-agreed business arrangement. Exceptional circumstances, such as the modification of existing Government-owned tooling and test equipment, may require other equitable business arrangements. These recovery methods are similar to those used in the commercial market today.

To ensure effective implementation of this acquisition policy, changes in programs, both in R&D and in production, must be kept firmly under control. Necessary changes in design must be made sparingly. Changes or modifications causing a change to baseline or performance characteristics and which result in a cost increase will be presented for review in accordance with the Navy's Program Management Proposal Process. For systems in production and for those already deployed we will take only block upgrades. Exceptions will be made for safety.

All fixed-price contracts must be fully funded in the POM. Solicitations and contracts will be streamlined to eliminate over-specifications and unnecessary requirements. We have an excellent example of the results of our efforts to eliminate over specification. I directed the Navy Specification Advocate General to review the High-Frequency Anti-Jam (HFAJ) Program with a view toward deleting unnecessary specifications. I am pleased to report that this exercise led to deletion of approximately 225 pages of unnecessary specifications, or a 30% reduction.

Gold-plating must be controlled throughout development and production. Off-the-shelf equipment and non-developmental items will be used, whenever practical, to save costly research and development investment. Commonality of parts is required and must be maximized at the subsystem/component level. The larger quantity buys that will result from this commonality will lead to an increased competitive base and greater savings to the Government.

Systems commanders are responsible for the successful implementation of their assigned programs and, as such, will be held accountable. Mismanagement, overspecification and inefficiency must be identified early and eliminated. Micromanagement must be discouraged to the maximum extent possible.

The establishment of the Materiel Professional community has played an important part in providing a viable career path for those working in acquisition and procurement. Since we established the Materiel Professional community slightly over a year ago, over 900 Officers, from Commander to Admiral, have been so designated. Approximately one-third of our Flag Officer billets are now set aside for Materiel Professionals. This year's Rear Admiral selection board reflected this fact. We are rapidly building a professional force with the education and experience required to make our acquisition managers capable, skilled business professionals with the warfare background necessary to properly manage weapons systems. To keep this program on track, no procurement or acquisition billet may now be filled by other than a Materiel Professional without a personal waiver from the Secretary of the Navy.

We are now more frequently rewarding program managers and other acquisition personnel who demonstrate superior performance. Acquisition managers are encouraged to maximize communications within the Navy, with OSD and with the other services to eliminate redundancy and to increase quantity buys. This will result in greater competition and lower costs. Managers are also encouraged to be creative and to consider alternate acquisition strategies for unique programs when they feel their approach will be more beneficial to the Navy than those I mentioned earlier.

We must ensure:

- that cost-capability tradeoffs are examined and that performance requirements that yield only marginal benefits are eliminated;
- that the program's acquisition strategy provides for maximum effective, sustainable competition;
- that the development specifications are tailored to the operational requirement; and
- that the hardware and software development reflects maximum practical commonality.

Fixed-price R&D contracts have resulted in substantial cost avoidance for the Navy. The original price estimates of the V-22, T-45TS, F-14D, and the A-6F upgrade totalled over \$4.1 billion. The actual fixed prices for these programs totalled \$3.1 billion. Cost avoidance amounted to more than \$1 billion.

Let me provide another example of how our new approaches have benefitted the Navy. In a recent case involving a major Navy program, Secretary Lehman stated that he wanted to use a second source and increase competition. The original contractor, upon learning of Secretary Lehman's intentions, gave the Navy a very competitive price in its attempt to keep the contract and prevent the Navy from going second source. The point is that just the threat of competition can keep prices down.

It is interesting to note the difference between the forecasted cost of a program and its actual cost. Consider the CG-47 Program. Analysts predicted that bringing in a second source from FY-1982 thru FY-1985 would cost the Navy \$437 million. The actual cost of bringing in a second source over that same period was a savings of \$728 million. The overall difference between the predicted and actual costs was \$1 billion.

When we consider another program, the surface ship Vertical Launch Systems (VLS), the overall cost savings has been over \$250M after just two years of competition. The point is that it is impossible to predict the cost effects of competition. It is clear, however, that second source programs are a good risk. Every Navy program using second sourcing has paid off and resulted in significant cost avoidance.

In summary, our acquisition policy has been recently reviewed and modified and incorporated several changes designed to make the acquisition process more efficient. Greater use of competition, increased contractor investment and earlier use of fixed-price contracts help reduce costs and enhance the production process. The policy benefits all participants in the acquisition process. It encourages investment and modernization on the part of contractors and enhances the quality of products and services provided to the Navy.

A3 EXCERPTS FROM SECNAVINST 4210.6 OF 20 NOV 85, "ACQUISITION POLICY"

1. Purpose. The purpose of this instruction is to promulgate policy guidelines that will improve and strengthen the acquisition process, such as adherence to established program initiation procedures, maximum use of competition, increased contractor investment, and earlier use of fixed price contracts. In addition, these procedures will enhance the full scale production decision process and provide a better management tool for ensuring a controlled transition from development to production.
2. Applicability. This instruction applies to all programs that will result in the Full Scale Engineering Development (FSED) acquisition phase and are expected to transition to production.
3. Background. In recent years the costs of many Navy programs have been reduced dramatically through increased competition in all phases of acquisition. The policy set forth below is designed to complement existing acquisition instructions and to strengthen competition and identify additional areas where cost savings and better quality may be realized.
4. Policy
 - a. The development cycle of each project/program will begin with a minimum of two contractors/contractor teams performing concurrent but separate development up to FSED at which time it will normally be narrowed to two contractors developing a system to one design.
 - b. The pre-FSED period will include risk reduction and cost-capability tradeoff efforts. An objective of this activity is to clearly identify and eliminate those capabilities which provide only marginal military worth when compared to cost and/or risk.
 - c. A Systems Commander will not proceed to Milestone II, for a decision to proceed with FSED, until he is satisfied that advanced development has reduced risks sufficiently to enable the contractors to commit to a fixed price type contract that includes not-to-exceed (NTE) prices or priced production options. The fixed price contract may include incentives on cost, performance or other factors, but will contain a firm upper limit, such as a ceiling price, on the amount of Government liability that will be incurred. The contract price should include the normal expected margin for changes during development. Changes beyond the scope that are included in the contract price, however, will be considered through the Program Management Proposal (PMP) process outlined in reference (a).
 - d. The first production buy will normally be apportioned between the contractors, so that each contractor will have the capability to compete equally for production, subject to the Competition in Contracting Act.
 - e. Once production has been approved, the Department of the Navy (DON) has historically provided a more stable market to its suppliers than found in the commercial free market. Therefore, it is reasonable to

expect that DON suppliers will carry a level of risk and investment in capital equipment comparable to normal commercial practice. They in turn should expect a fair and reasonable return on their investment through profit. Once production has been approved at Milestone III, contractors are expected to provide all production tooling and test equipment, as well as those facilities required for program execution. Acceptance test equipment, however, will continue to be funded by the Government. Recovery of these investment costs will usually be through consideration and recognition of depreciation, and program related profit in a mutually agreed business arrangement. Exceptional circumstances, such as the modification of existing government owned tooling and test equipment, may require other equitable business arrangements.

5. Procedures

a. Changes in programs, both in Research and Development and in production, must be kept firmly under control. Following Milestone II, necessary changes and modernization in design must be made sparingly. Changes or modifications requiring a performance specification or funding change will be presented for review in accordance with the PMP process. All such changes should be made in block upgrades for systems in production and for those already deployed. Exceptions in the block upgrade policy will be made for safety of flight and other emergencies.

b. Solicitations and contracts will be streamlined to eliminate overspecification and unnecessary requirements. For example, off-the-shelf equipment--down to nuts and bolts--should be used whenever practical, and commonality of parts at the subsystem/component level is required, to the maximum extent possible, especially where multiple sources exist.

6. Responsibilities

a. The Systems Commanders are responsible for the successful implementation of their assigned programs, and as such will be held accountable. Mismanagement, overspecification and inefficiency must be identified early and eliminated. Communications with the Office of the Secretary of Defense, with the other Services, and within the Navy, will be maximized to eliminate redundancy and duplication, and to increase commonality and quantity buys, to achieve greater competition and lower costs. Rewards should be given more frequently to program managers and acquisition management personnel for demonstration of excellent performance.

b. Program managers are responsible to their Systems Commanders, and will be held accountable for the successful implementation of their assigned programs. Program managers are responsible for ensuring that program schedule and funding are consistent with the acquisition policies established herein, on a continuing basis from program inception through completion. These elements of program management are to be adjusted as necessary throughout the acquisition cycle. Such adjustments should be reflected in documentation included in the Planning, Programming and Budgeting System (PPBS) process, in the decision milestone process, and in the acquisition planning process.

c. Program managers will accept direction only in writing through the established chain of command, including ASN oversight. Program managers shall assure full communication with Program Sponsors in the Navy and Marine Corps, but this must stop short of accepting authoritative direction from them.

d. The following must occur prior to the FSED decision:

(1) The Chief of Naval Operations or the Commandant of the Marine Corps shall certify that the results of cost capability tradeoffs have been examined and that performance requirements that yield only marginal worth have been eliminated.

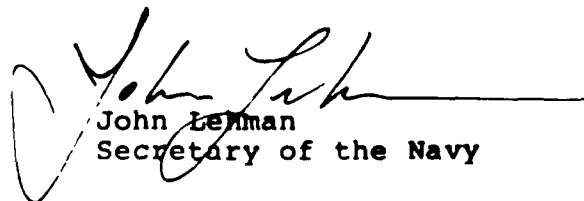
(2) The Competition Advocate General shall certify that the program's acquisition strategy provides for maximum effective, sustainable competition considering the unique nature of each acquisition.

(3) The Specification Control Advocate General must certify that the development specifications, including the contract data requirements list, have been reviewed and tailored to the operational requirements.

(4) The Commander of the responsible Systems Command must certify that the proposed hardware/software development reflects maximum practical commonality.

.

8. Action. This instruction is effective immediately.


John Lehman
Secretary of the Navy

A4 EXCERPTS FROM THE SUMMARY OF MAJOR PROVISIONS OF THE GOLDWATER-NICHOLS DEPARTMENT OF DEFENSE REORGANIZATION ACT OF 1986 RELEASED BY THE SENATE COMMITTEE ON ARMED SERVICES 11 SEPTEMBER 1986

II-9* Transfers responsibility for [“assessing military requirements for acquisition programs” and various other duties] currently performed by the corporate JCS to the Chairman.

• • • •

V-5 Consolidates sole responsibility for [acquisition and various other functions] in each Service Secretariat

V-6 Consolidates sole responsibility for research and development in each Service Secretariat but specifies that the Service Secretaries may assign to the military headquarters staffs responsibility for those aspects of research and development that relate to military requirements and test and evaluation.

V-7 Directs the Service Secretaries to prescribe the relationship of offices within the Secretariats responsible for these functions to the military headquarters staffs.

• • • •

V-11 Reduces [by 15%] the number of personnel serving in the Secretariat and military headquarters staff of each Military Department.

• • • •

VI-1 Reduces the number of defense reports required by the Congress from the President and the Defense Department by about two-thirds of the total.

VI-2 Reduces the number of personnel serving on the lower-level headquarters staffs of the Military Departments

*Title II of the Act, paragraph 9 of the discussion of Title II

APPENDIX B THE NAVY AND DOD DIRECTIVE SYSTEMS

TABLE OF CONTENTS

B1	Scope and Purpose	B-1
B2	Numbering of Navy Directives	B-1
B3	Identifying and Obtaining Instructions	B-1
	B3.1 Navy Consolidated Subject Index	B-1
B4	DOD Directive System	B-2
	B4.1 DOD Quarterly Listing	B-2

APPENDIX B

THE NAVY AND DOD DIRECTIVE SYSTEMS

The Department of the Navy Directives Issuance System consists primarily of two types of directives: instructions, which are directives of a continuing nature and are effective until cancelled; and notices, which are directives of a one-time nature, or are applicable for a brief period, usually 6 months or less. Notices contain a provision for their own cancellation.

B1 SCOPE AND PURPOSE

Directives serve two purposes. First, they prescribe or establish policy, organization, methods, or procedures; and second, they require action or contain information essential to the effective administration or operation of activities concerned. All Department of the Navy directives are issued in the Navy Directives Issuance System with the following required exceptions:

1. Top Secret directives
2. Joint Army-Navy-Air Force publications (JANAP's) which are numbered serially
3. Registered publications
4. Plans issued under the Navy Planning System.

Optional exceptions to the Navy Directives System are:

1. Military operational releases
2. Book-type publications (manuals and technical publications)
3. Directives addressed to less than six addressees, including "Copy to" addressees. (In this connection primary consideration should be given to content rather than number of addressees.)

B2 NUMBERING OF NAVY DIRECTIVES

Navy Directives are numbered in accordance with the classification system described in SEC-

NAVINST 5210.11, "Department of the Navy Standard Subject Identification Codes." Additional information on this subject may be found in Section C9 of this Guide.

Numbers preceding the decimal point denote the subject of the directive, while the numbers following the decimal are consecutive numbers assigned by the issuing office. Letters following the consecutive number indicate the revision. For example, with OPNAVINST 3960.10B, the 3960 indicates that the directive is on the subject of test and evaluation. The 10 indicates that it was the tenth instruction issued by OPNAV on that subject, while the B indicates it is the second revision of OPNAVINST 3960.10.

SECNAVINST 5210.11

B3 IDENTIFYING AND OBTAINING INSTRUCTIONS

Identifying all directives dealing with a particular subject matter may prove to be somewhat more difficult than anticipated. Once the required directives have been identified, obtaining copies is relatively easy. Each bureau, office and systems command maintains a directives control point for the purpose of supplying directives to the activity. Such offices are also maintained by the Chief of Naval Operations and the Secretary of the Navy. When new directives arrive at an organization's directive control point, copies are routed to the various sections. Additional copies may be obtained as needed through the directive control point, or through the central stocking point, Naval Publications and Forms Center, Philadelphia, Pennsylvania.

B3.1 Navy Consolidated Subject Index. The biggest problem is in identifying the specific directives which provide guidance on a particular subject. Primary aid for identifying directives covering particular subjects is the current edition of NAVPUB Notice 5215, "Consolidated Subject

Index," which is issued semiannually. Each edition also includes a numerical list of effective instructions. This document provides a guide to the subject matter of unclassified instructions issued by components of the Navy Department and distributed to addressees outside the originating office. It is usually effective in identifying directives dealing with a subject listed in the "Subject" of the directive.

The greatest difficulty is in identifying directives which affect subjects which are not the principal subject of the directive. If an attempt were being made to identify directives dealing with "Reprogramming of appropriated funds," the most important directive on the subject is NAVCOMPT Instruction 7133.1, "Procedures and Reporting Requirements Related to the Reprogramming of Appropriated Funds; implementation of." The search for it could also be narrowed considerably by hunting through the "Financial Management" 7000-7999 section of SECNAV Instruction 5210.11, "Department of the Navy Standard Subject Identification Codes," where it could be determined that a "reprogramming" instruction would be numbered 7133. However, the "Reprogramming" instruction covers other matters related to the subject, but which also are important to other subject areas. As a case in point, consider the following paragraph from DOD Directive 7250.5, "Reprogramming of Appropriated Funds," which is implemented by and is an enclosure to NAVCOMPTINST 7133.1:

POLICIES

A. General. The Congressional Committees concerned with the Department of Defense Appropriation Acts and the authorizing Acts related thereto and the Department of Defense have generally accepted the view that rigid adherence to the amounts justified for budget activities or for subsidiary items or programs may unduly jeopardize the effective accomplishment of planned programs in the most businesslike and economical manner, and the unforeseen requirements, changes in operating conditions, revisions in price estimates, wage rate adjustments, etc., require some diversion of funds from the specific purposes for which they were justified. Reprogramming measures, developed in consultation with the Committees, are both necessary and desirable, and will provide a firm basis for retention of Congressional control over the utilization

of Defense appropriations by assuring that the Congressional intent is carried out while, at the same time, providing a timely device for achieving flexibility in the execution of Defense programs.

The above material, it will be remembered, could be retrieved through use of the Funds or Reprogramming sections in two different publications. If, however, one were using these two publications to gather instructions relating to Congressional committees and their relationship to Research and Development, this instruction would not be listed. The Consolidated Subject Index does not include this instruction in either the Committee section or the Congressional section.

B4 DOD DIRECTIVE SYSTEM

The DOD directive numbering system is based on issuing offices within the Office of the Secretary of Defense rather than on subject matter covered in the directive. Thus there is no systematic direct relationship between the DOD system and the Navy system.

DOD directives requiring direct implementing action within the Department of the Navy are implemented by Navy directives. Often the DOD directives are included as enclosures to the implementing Navy directive.

DODDIR 5025.1

B4.1 DOD Quarterly Listing. The Office of the Secretary of Defense provides a quarterly publication *DOD Directives System: Quarterly Listing of Unclassified Issuance and Subject Index*. Part 1 is a comprehensive subject index. Part 2 is a check list of all DOD directives and instructions in effect. The listing in Part 2 shows all issuances issued or reissued since the last Quarterly Listing as well as the issue date and number of changes in effect. Distribution of this publication is limited.

DOD Directives System: Quarterly Listing of Unclassified Issuance and Subject Index, issued by OASD (Administration), Correspondence and Directives Division.

APPENDIX C CLASSIFICATION SYSTEMS

TABLE OF CONTENTS

C1	Some Theoretical Aspects of Classification Systems	C-1
C1.1	Function and Utility of Classification Systems	C-1
C1.2	Criteria for Classification Systems	C-1
C2	Qualities of Baseline Cost Estimates	C-2
C2.1	Estimates for Use in SARs	C-2
C2.2	Measures of Confidence for Cost Estimates	C-2
C3	Naval Research Program Structure	C-3
C3.1	Program Building Blocks	C-3
C3.1.1	Program elements	C-3
C3.1.2	Subelements of the Research Program	C-3
C3.1.3	Research sponsor/claimant codes	C-3
C3.1.4	Subprojects/task areas	C-3
C3.2	Naval Research Requirements	C-4
C4	Exploratory Development Program Planning Structure	C-4
C4.1	Program Building Blocks	C-4
C4.1.1	Program element	C-4
C4.1.2	Technology thrusts	C-5
C4.1.3	Block program	C-5
C4.1.4	Project	C-5
C4.2	List of Exploratory Development Program Elements	C-5
C5	Mission Need Classification Structures	C-6
C5.1	Marine Corps Planning Categories	C-6
C5.2	Naval Unit Status Criteria	C-7
C6	Classifications used for Appropriations	C-7
C6.1	DOD Budget Structure	C-7
C6.2	RDT&E Budget Activities	C-8

C7	Classifications used in the DOD Programming System	C-8
C7.1	Major Programs	C-8
C7.2	Program Element	C-8
C8	Standard Cost Definitions	C-9
C9	Department of the Navy Standard Subject Identification Code	C-10
C9.1	Major Subject Groups	C-10
C9.2	Primary, Secondary, and Tertiary Numerical Subject Groups	C-11
C9.3	RDT&E Subject Groups	C-11
C10	COSATI Subject Category List	C-11
C10.1	Scientific and Technological Fields and Groups	C-12
C11	Work Breakdown Structure	C-12
C11.1	Ship Work Breakdown Structure (SWBS)	C-13

APPENDIX C CLASSIFICATION SYSTEMS

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

This section presents several classification systems. Some are employed in RDT&E management and others affect RDT&E indirectly. These classification systems provide perspectives of the Department of Defense from several points of view.

C1 SOME THEORETICAL ASPECTS OF CLASSIFICATION SYSTEMS

C1.1 Function and Utility of Classification Systems. Classification systems are critical to management. The more appropriate the classification systems, the more manageable is the effort. Classification systems determine the type of information available to managers and thus shape their perceptions of the reality they are responsible for managing. The prime function of managers is the efficient accomplishment of their mission. They are responsible for achieving maximum mission accomplishment from a fixed amount of resources; or, conversely, they are responsible for accomplishing a fixed task with minimum possible resources. To achieve such efficiency, managers must achieve optimum "balance" within their programs. Optimum balance means that all resources available to them must be put to their most productive use. In other words, they must make "tradeoffs," or move resources within their programs to put them to their most productive use. Classification systems provide both the key to detection of imbalance within the program and opportunities to increase effectiveness through tradeoffs. (See paragraph 4.4.1, Concept of the "balanced program.")

A classification system is generally designed to meet a specific need of a particular user. No single rigid classification system can be designed to meet the needs of all users. An understanding of classification systems can aid program managers in selecting the system(s) that will meet their needs.

C1.2 Criteria for Classification Systems. Criteria useful for evaluating classification systems include:

- It must be useful. It must display information in a manner that will permit a decision maker to make a decision with confidence that all the relevant information is available and that it is accurately displayed.
- It must be simple.
- The elements of the system must be mutually exclusive; otherwise, decisions based on the system can be ambiguous.
- Elements must be symmetrical. This means that elements that do not convey similar concepts should be discarded or replaced. For example, if one were to classify materials and an element appeared which dealt with human factors, it would be readily apparent that it was out of place.
- Elements must cover the entire spectrum of the subject matter being classified.

- The system should be expandable to accommodate new concepts and disciplines.
- The system must be convertible. This enables the decision maker to shift readily from one system to another and thereby derive a different perspective on the subject matter.
- It should lend itself to mechanical accumulation of data. As classification systems pass from a higher to a lower organizational level the degree of detail in a specific area increases. In this transition the mass of data required to fulfill the needs of the system increases to such an extent that it is essential that a classification system be amenable to computerization.

C2 QUALITIES OF BASELINE COST ESTIMATES

All judgments of costs are made by comparing actual costs to a criterion termed a "baseline cost estimate." Categories have been established for rating the quality of these baseline estimates.

C2.1 Estimates for Use in SARs. In Selected Acquisition Reports (SARs), cost estimates are based on the following definitions:

- **Planning Estimate (PE)**—The baseline estimate of technical and operational characteristics, schedule milestones, and program acquisition cost (by appropriation) developed for the approved program before Milestone II (full-scale development (FSD) decision)).
- **Development Estimate (DE)**—The baseline estimate of technical and operational characteristics, schedule milestones, program acquisition cost (by appropriation), and annual production rates developed for the approved program at or subsequent to Milestone II (full-scale development decision) but before the first Milestone III production decision).

- **Production Estimate (PdE)**—The baseline estimate of technical and operational characteristics, schedule milestones, program acquisition cost (by appropriation), and annual production rate developed for the approved program at or subsequent to the earliest Milestone III (production decision).
- **Current Estimate (CE)**—A DOD component's latest forecast of technical and operational characteristics, schedule milestones, program acquisition cost, and annual production rates for acquiring the approved program.

DODINST 7000.3 (SECNAV 7700.5)

C2.2 Measures of Confidence for Cost Estimates. The following standards are prescribed for use with cost estimate documents in the "Cost Estimate Documentation Summary" (NAVMAT Form 7000/2 (7/76)):

Class A—Detailed Cost Estimate (Post budget—contract estimates). Estimate based on contract plans and evaluation of firm quotations for major material items.

Class B—Bid Evaluation Cost Estimate (Post budget—contract estimates). Estimate based on contract plans and evaluation of contractor proposals in response to a RFP.

Class C—Budget Quality Estimate. Estimate based on an engineering analysis of detailed characteristics of item under consideration.

Class D—Feasibility Estimate. Estimate based on technical feasibility studies and/or extrapolated from higher quality estimates of similar items.

Class E—Computer Estimate. Estimate developed usually by a computer model and based on cost estimating relationships and gross parameters.

Class F—Ball Park Estimate. Quick cost estimates prepared in absence of minimum design

and cost information and based on gross parameters.

Class X—Directed or Modified Cost Estimate. Estimate not developed by SYSCOMS through normal cost estimating processes.

OPNAVINST 7000.17; DON Programming Manual, Appendix J

C3 NAVAL RESEARCH PROGRAM STRUCTURE

The structure for the Naval Research Program is issued by the Chief of Naval Research. It is used for planning and programming research throughout the Department of the Navy. The numbering system for specific elements of the Research Program is depicted graphically in Figure C-1.

ONRINST 3910.2

C3.1 Program Building Blocks.

C3.1.1 Program elements. The Naval Research Program Structure consists of three program elements:

61103N—University Research Initiative
61152N—In-House Laboratory
Independent Research
61153N—Defense Research Sciences

C3.1.2 Subelements of the Research Program. The program is structured around subelements as follows:

11 — General Physics
12 — Radiation Sciences
13 — Chemistry
14 — Mathematics
15 — Computer Sciences
21 — Electronics
22 — Materials
23 — Mechanics
24 — Energy Conversion
31 — Ocean Sciences
32 — Ocean Geophysics
33 — Atmospheric Sciences
34 — Astronomy and Astrophysics
41 — Biological and Medical Sciences
42 — Behavioral Sciences
51 — University Research Instrumentation
52 — Multidisciplinary Support

C3.1.3 Research sponsor/claimant codes. All elements of the Research Program are identified with the sponsoring organizations by the following letter codes:

M — Naval Medical Research and Development Command (NAVMEDRSCHDEVCOM)
R — Office of the Chief of Naval Research (OCNR)
Y — Naval Facilities Engineering Command (NAVFACENGCOM)

C3.1.4 Subprojects/task areas. Projects are further subdivided into subprojects (task areas) by each funding activity (Office or Command).

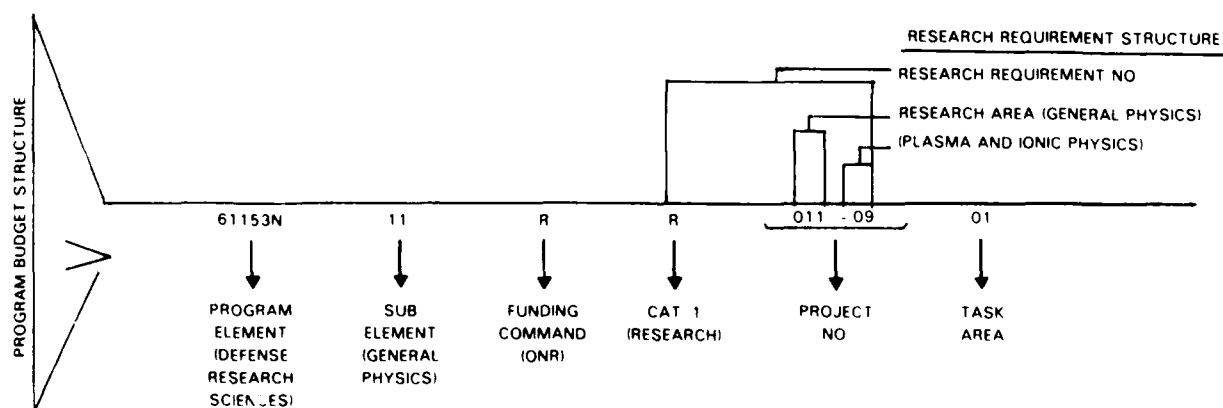


Figure C-1. Research Program/Budget Structure

C3.2 Naval Research Requirements. Research Requirements are identified by a five-digit "R" number in which the second and third digits indicate the Naval Research Area (the 17 Defense Research Sciences' subelements or the In-House Laboratory Independent Research Element). The fourth and fifth digits indicate the specific Research Requirement within the related Naval Research Area. For example:

- R031 — Ocean Sciences Research Area
- R-031-01 — Ocean Science Engineering
- R-031-02 — Ocean Biology
- R-031-03 — Oceanography.

C4 EXPLORATORY DEVELOPMENT PROGRAM PLANNING STRUCTURE

The Exploratory Development Program Planning Structure is promulgated by the Chief of Naval Research for use in planning and programming Exploratory Development throughout the

Department of the Navy. The Exploratory Development Program is managed by the Office of Naval Technology (ONT), a component of the Office of the Chief of Naval Research (OCNR).

OCNRINST 3910.3

C4.1 Program Building Blocks

C4.1.1 Program element. Program elements are the smallest subdivisions of the R&D program considered in the DOD programming system. The Exploratory Development Program, structured along naval mission area lines, provides funding by program elements which approximate as closely as possible the mission areas. Naval warfare mission areas and corresponding Exploratory Development mission areas are as shown below:

Naval Warfare Mission Areas and Corresponding 6.2 Program Mission Areas

Naval Warfare Mission Area	6.2 Mission Area	Program Element
AAW — Anti-air Warfare	AAW*	62111N
ASU — Antisurface Ship Warfare	ASUW*	62111N
STW — Strike Warfare		
ELW — Electronic Warfare	EW	62113N
ASW — Antisubmarine Warfare	ASW*	62314N
MIW — Mine Warfare	MW*	62315N
NSW — Naval Special Warfare	SPW	62315N
AMW — Amphibious Warfare	AMW	62131M
MOB — Mobility	Ships	62121N
	Aircraft	62122N
	Submarines	62323N
	Nuclear Propulsion	62324N
CCC — Command Control and Communications	C3I	62232N
INT — Intelligence		
CON — Construction	Mission Support**	62233N
FSO — Fleet Support Operations		
LOG — Logistics		
NCO — Noncombat Operations		
STS — Strategic Sealift		
NONE	Systems Support***	62234N
	Lab. Independent Exploratory Devel.	62936N

*Includes Ocean and Atmospheric Support (P.E. 62435N).

**Includes Ocean and Atmospheric Support (P.E. 62435N), Personnel Training and Simulation, CBR and Logistic Technology

***Includes Electronic Devices, Materials, Human Factors and Computer Technology

Similar, or closely related mission areas are funded under the same program element. Each mission area is subdivided by the technology thrusts needed to meet its objectives. Technology thrusts, in turn, are supported by one or more technical projects, combinations of which are contained in a block program.

Program Element 62XYZ

where

X = 1 For ONT AAW/AWUW/SAT Directorate (ONT Code 21)

2 For ONT Support Technologies Directorate (ONT Code 22)

3 For ONT ASW/UT Directorate (ONT Code 23)

4 For ONT Ocean Science and Technology Directorate (ONT Code 24)

9 For ONT Chief Scientist (ONT Code 20T)

Y = 1 For warfare-related technology

2 For platform-related technology

3 For multi-application technology

X = As required to ensure uniqueness of last two characters of PE number for each reference

Each project addresses one technical thrust.

See paragraph C4.2 for a listing of program elements within the Exploratory Development Program.

C4.1.2 Technology thrusts. Technology thrusts define the operational objectives to be achieved via combinations of technology and establish the objectives of the block diagrams which support this technology thrust. Each technology thrust has a single operational/performance objective or very closely related ones supporting the warfighting objectives of its mission area. A technology thrust may draw on several blocks and several projects within each of those blocks to meet its objectives.

C4.1.3 Block program. A block program comprises an integrated group of technology projects with closely related applications and/or technical objectives assigned to a given lead Navy laboratory or systems command program manager. Typically, a block program encompasses the overall Exploratory Development Program's efforts in a warfare technology area. The block is composed of a number of projects each of which may address a different technology thrust and/or mission area. Block programs are management entities designed to aggregate funding and program efforts to the maximum extent possible in order to increase management efficiency and exploit the synergism of having similar tasks managed by a single Claimant and within a single management structure.

C4.1.4 Project. A project is a subdivision of a block program and represents a technology development which addresses the objectives of one and only one technology thrust. Thus projects are generally defined by the circumstances, may be either specific technology or warfare technology developments. The term *specific technologies* refers to an application of a science or engineering discipline, such as, radome material technology or laser communications technology. The term *warfare technology* refers to closely related warfare, weapons or platform objectives, such as, air launched weaponry, surface ship technology, airborne electronic warfare, etc.

C4.2 List of Exploratory Development Program Elements. Program elements are indicated by the five digit number shown in the listing below. The numbering system is described in Figure C-2.

62111N AAW/ASUW Technology

62113N Electronic Warfare Technology

62121N Surface Ship Technology

62122N Aircraft Technology

62131M Marine Corps Air-ground Technology

62232N Command, Control and Communications Technology

An Exploratory Development effort	F
in the "Missile Propulsion" Program Group	31 (PE 62331N)
in the "Weaponry" Functional Area	300
in the "Weapon Propulsion and Explosives" Functional Subarea	330
in specific Project Area "Solid Propulsion"	332
has Project Number	F 31 332
The portion performed by NAVAIR	W
has Subproject Number	WF 31 332

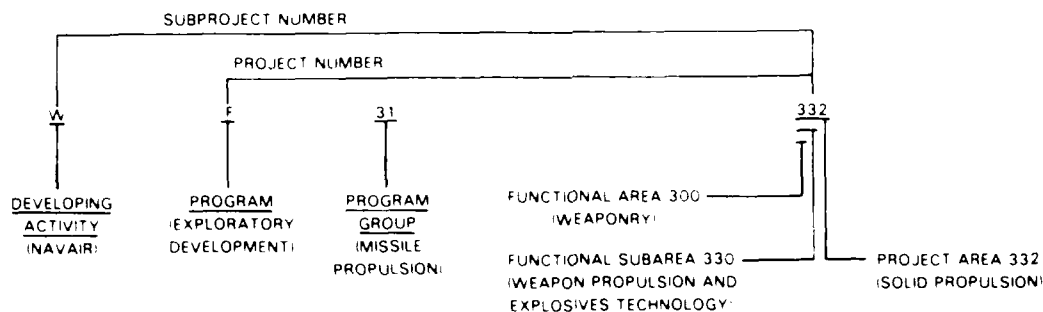


Figure C-2. Exploratory Development Program/Budget Structure

- 62233N Mission Support Technology
- 62234N Systems Support Technology
- 62314N ASW Technology
- 62315N Mine and Special Warfare
- 62323N Submarine Technology
- 62324N Nuclear Propulsion
- 62435N Ocean and Atmospheric Support Technology
- 62936N Independent Exploratory Development

C5 MISSION NEED CLASSIFICATION STRUCTURES

Mission need classification structures (see discussion of "needs and requirements" in 2.2.9.1) provide guidance for conceptualizing potential systems and development of the technology base. There is a number of such struc-

tures, developed more or less independently by organizations for their own purposes. Various efforts have been and are being made to achieve some standardization of these structures, which if successful will benefit information flow and effective planning. Examples within DOD are the Marine Corps Science and Technology Objectives (STOs) (see 2.1.3.3 and 2.5.9), and the Navy Combat Readiness Criteria.

C5.1 Marine Corps Planning Categories.

Marine Corps Science and Technology Objectives are set forth in the following categories:

STO 211 Close Combat (Direct Fire and Mobility)

- 211.1 Infantry Systems/Light Weapons
- 211.2 Armor
- 211.3 Anti-Armor/Material
- 211.4 Combat Mobility
- 211.5 Attack Helicopters

STO 212 Fire Support (Indirect Fire)

- 212.1 Cannon Artillery
- 212.2 Mortars
- 212.3 Rockets/Missiles

STO 213 Ground Air Defense

- 213.1 Weapons
- 213.2 Munitions
- 213.3 C³I
- 213.4 Support

STO 214 Land Mine WF

- 214.1 Mines
- 214.2 Barriers
- 214.3 Countermeasures

STO 215 Combat Support

- 215.1 Engineer
- 215.2 NBC
- 215.3 Other Combat Support

STO 216 Combat Service Support

- 216.1 Supply
- 216.2 Maintenance
- 216.3 Other CSS

STO 220 Tactical Air Warfare

- 221 Counter Air
- 222 Close Air Support/
Battlefield Interdiction
- 223 Interdiction/Naval Strike
- 224 Defense Suppression
- 225 Support

**STO 235 Tactical Naval Warfare—
Amphibious Warfare**

- 235.1 Forces Afloat/Deployments
- 235.2 Prelanding Operations
- 235.3 Ship to Objective Projections
- 235.4 Conduct/Support of Operations
Ashore
- 235.5 Redeployment

STO 250 Theater and Tactical C³I

- 254 Tactical Command and Control (C²)
- 255 Tactical Surveillance, Reconnaissance,
and Target Acquisition
- 256 Tactical Communications
- 257 Electronic Warfare and Counter C³I

STO 261 Mobility—Air

- 261.1 Strategic
- 261.2 Tactical

STO 262 Mobility—Sealift

- 262.1 MSC/Commercial Ships

262.2 Service Force Ships**STO 491 USMC Wide Support
Manpower and Training**

- 491.1 Manpower Requirements
- 491.2 Personnel Procurement
- 491.3 Personnel Management
- 491.4 Training
- 491.5 Performance

C5.2 Naval Unit Status Criteria. For purposes of assessing and reporting the status of Fleet units, OPNAV has established a three-level structure of unit status criteria which some RDT&E planners hold to be well suited as a framework for structuring RDT&E needs. The unit status reporting structure has 15 mission areas at the top level which are broken out into "Operational Capabilities" at the next level; most of these are further broken out into more detailed statements of "Suboperational Capabilities." For example, the "Anti-Air Warfare" mission area includes the Operational Capability, "Engage airborne threats using surface-to-air armament," which includes the Suboperational Capability, "Engage airborne threats using installed AA weapons."

**C6 CLASSIFICATIONS USED FOR
APPROPRIATIONS**

The appropriations classification structure is prescribed for use in development of the budget and its presentation to the Congress.

C6.1 DOD Budget Structure. The following functional titles and subdivisions thereof are prescribed for use in appropriate budgetary and fiscal presentations.

Military Personnel
Active Forces
Reserve Forces

Operation and Maintenance

Procurement
Aircraft

Missiles
Ships
Combat Vehicles, Weapons, and
Torpedoes
Ordnance, Vehicles, and Related
Equipment
Electronics and Communications
Equipment Programs

Research, Development, Test, and
Evaluation (RD&T)

Military Construction

Truck Fleets

Truck Repair and Parts

Military Construction

Truck Fleets

Truck Repair and Parts

Research, Development, Test, and
Evaluation (RD&T)

Truck Fleets

U.S. Navy - FY 1980 Major Program (NAVCOMP)

C-62. RD&T Budget Activities. The RD&T budget is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities. It is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities.

The RD&T budget is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities. It is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities. The RD&T budget is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities.

The RD&T budget is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities. It is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities. The RD&T budget is the portion of the total budget which is used for research, development, test, and evaluation (RD&T) activities.

funded in recent years have been programs in aeronautics and propulsion, flight simulation, biomedical sciences, weapons technology, high-energy lasers, and electronics.

3. Strategic programs. This activity ensures that future strategic systems will continue to deter nuclear attacks, as well as coercion through the threat of nuclear attacks against the United States and its allies. The submarine and missile components of the TRIDENT sea-launched ballistic missile system continue in development.

4. Tactical programs. This activity provides new combat systems for general-purpose forces of the United States and its allies.

Intelligence and communications. This activity provides improvements to Navy capabilities in intelligence and worldwide communications.

5. Defensewide mission support. This activity provides funding for support-type efforts including Federal contract research centers, ranges and test facilities, and studies and analyses.

C7. CLASSIFICATIONS USED IN THE DOD PROGRAMMING SYSTEM

C7.1. Major Programs

- 1. Strategic Forces
- 2. General Purpose Forces
- 3. Intelligence and Communications
- 4. Amphibious and Sealift
- 5. Combat and Reserve Forces
- 6. Research and Development
- 7. Logistics, Supply and Maintenance
- 8. Training, Medical, and Other
- 9. General Personnel Activities
- 10. Administration and Associated Activities
- 11. Foreign Military Assistance

U.S. Department of Defense Manual

C7.2. Program Element

The program element is the basic building block of the Program FYDP. It is

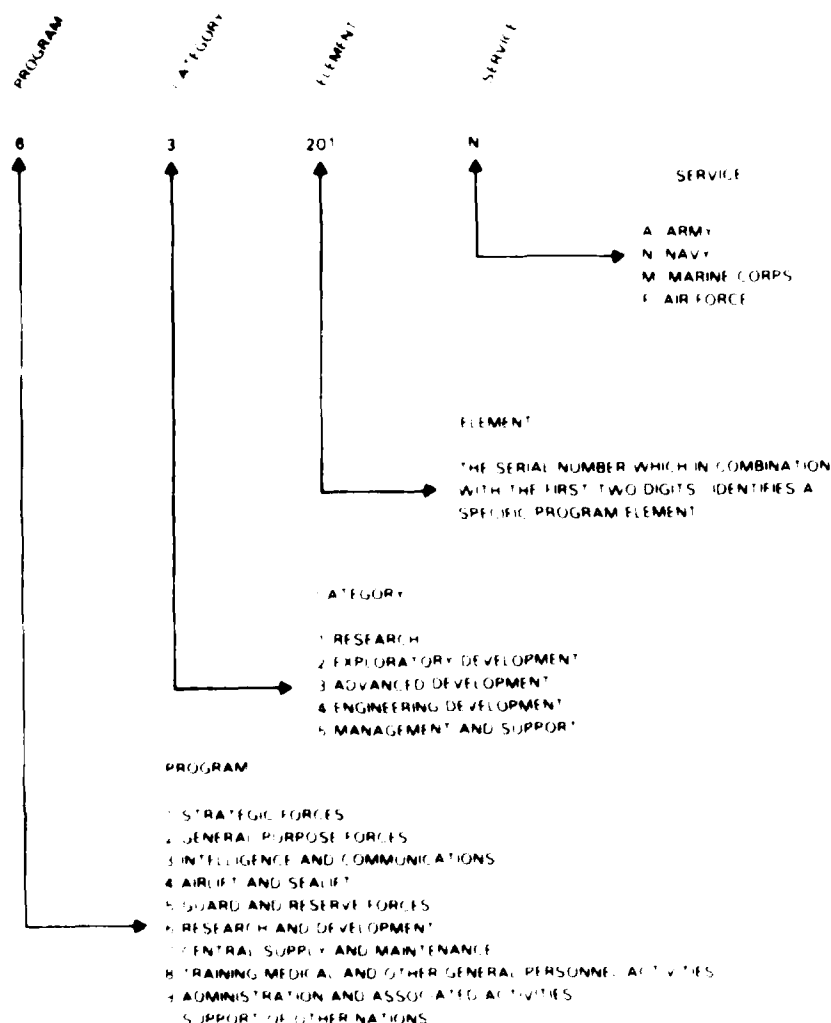


Figure C-3. Example of Program Element Numbering

a description of the mission to be undertaken and a collection of the organizational entities identified to perform the mission assignment. Elements may consist of forces, manpower, materials (both real and personal property), services, and associated costs. The full list of Department of the Navy program elements is detailed in the *DXN Programming Manual*.

Program elements are identified by a six character symbol as set forth graphically in Figure C-3.

C8 STANDARD COST DEFINITIONS

The unit procurement costs of weapon systems can vary substantially, depending on what is included in the cost figures. To clear up confusion, the following standard cost definitions have been established.

- Flyaway Cost
 - Basic Unit (airframe, hull, chassis, etc.)
 - Propulsion Equipment

Electronics/Avionics
 Armament
 Installed Government-Furnished
 Equipment
 Other Level 3 Work Breakdown Structure
 Hardware/Software Subsystem Elements
 System Project Management and
 System Test (as appropriate)
 Nonrecurring and Recurring Production
 Costs

- **Weapon System Cost**
 Flyaway Cost (see above) plus:
 Peculiar Ground Support Equipment
 Peculiar Training Equipment
 Data (Publications, Technical)
 Contractor Plant and Field Services
 Installation and Checkout
- **Procurement Cost (as shown in SAR)**
 Weapon System Cost (see above) plus:
 Initial Spares
 Outfitting Post Delivery, Cost
 Growth, Escalation, and Ship
 Contract Design (Navy
 Shipbuilding Only)
- **Program Acquisition Cost (as shown in SAR)**
 Procurement Cost (see above) plus:
 RDT&E
 MILCON.

*DON Budget Guidance Manual (NAVCOMPT
 7102.2)*

C9 DEPARTMENT OF THE NAVY STANDARD SUBJECT IDENTIFICATION CODE

The Department of the Navy Standard Subject Identification Code provides a single coordinated system for classifying records, directives, correspondence, reports, forms, and other documents by subject

SECNAVINST 5210.11

C9.1 Major Subject Groups.

1000 Series—Military Personnel. Includes subjects relating solely to the administration of military

personnel. (Civilian personnel subjects are included in the 12000 series. General personnel subjects relating to both civilian and military personnel are included in the 5000 series.)

2000 Series—Communications. Includes subjects relating to general communication matters and to communication systems and equipment.

3000 Series—Operations and Readiness. Includes subjects relating to such matters as operational plans, fleet operations, operational training and readiness, warfare techniques, operational intelligence, research and development, geophysical and hydrographic support.

4000 Series—Logistics. Includes subjects relating to the logistical support of the Navy and Marine Corps, including procurement, supply control, property redistribution and disposal, travel and transportation, maintenance, construction and conversion, production and mobilization planning, and foreign military assistance.

5000 Series—General Administration and Management. Includes subjects relating to the administration, organization, and management of the Department of the Navy, including general personnel matters (concerning both civilian and military personnel), records management programs, security, external in internal relations, audiovisual matters, law and legal matters, office services, office automation, and publication and printing matters.

6000 Series—Medicine and Dentistry. Includes subjects relating to medical matters, such as physical fitness, general medicine, special or preventive medicine, dentistry, and medical equipment and supplies.

7000 Series—Financial Management. Includes subjects relating to the financial administration of the Department of the Navy, including budgeting, disbursing, accounting, auditing, industrial and other special financing matters, and statistical reporting

8000 Series—Ordnance Material. Includes subjects relating to all types of ordnance material and weapons, including ammunition and explosives, guided missiles of all types, nuclear weapons, fire

control and optics, combat vehicles, underwater ordnance materials, and miscellaneous ordnance equipment.

9000 Series—Ships Design and Material. Includes subjects relating to such matters as the design, characteristics, and readiness of ships, and to ships material and equipment.

10000 Series—General Materials. Includes subjects relating to general categories of materials not included in the specialized material groups. It includes audiovisual/graphic/arts/photographic/television/video equipment and accessories, general machinery and tools, personnel material, and miscellaneous categories.

11000 Series—Facilities and Activities Ashore. Includes subjects relating to ashore structures and facilities, transportation facilities, heavy equipment, utilities and services, and other similar subjects.

12000 Series—Civilian Personnel. Includes subjects relating solely to the administration of civilian personnel. (Military personnel subjects are included in the 1000 series. General personnel subjects relating to both civilian and military personnel are included in the 5000 series.)

13000 Series—Aeronautical and Astronautical Material. Includes subjects relating to aeronautical and astronautical material including parts, accessories, and instruments; special devices, armament, aerological equipment, weapon systems, types of aircraft, and astronautic vehicles.

16000 Series—Coast Guard Missions. Includes subjects relating solely to administration and mission of the Coast Guard, not to be used by Navy or Marine Corps activities.

C9.2 Primary, Secondary, and Tertiary Numerical Subject Groups. The fourteen major numerical subject groups are subdivided into primary, secondary, and sometimes tertiary breakdowns. Primary subjects are designated by the last three digits (the hundred group) of the code number. For example, the major subject of General Administration and Management, coded 5000, is subdivided into primary groups as follows

- 5000 General Administration and Management
 - 5200 Management Programs and Techniques
 - 5300 Manpower/Personnel
 - 5400 Organization, Functions, and Status

Etc.

Primary subjects are subdivided into secondary subjects by the last two digits of the numeric code. Tertiary breaks are indicated by the final digit. For example:

- 5200 Management Programs and Techniques
 - 5210 Records/Paperwork Management; Office Methods
 - 5211 Files and Records Systems

Some of the smaller subject groups are not subdivided below the primary breakdown. Other larger subject groups are divided into many secondary and tertiary subjects, the extent depending upon the scope and complexity of the major subject.

C9.3 RDT&E Subject Groups. The primary subject group, Research and Development, under major subject area, Operations and Readiness, is subdivided into four secondary groups as follows

- 3000 Operations and Readiness
 - 3900 Research and Development
 - 3910 Plans
 - 3920 Programs
 - 3930 Projects
 - 3960 Tests and Evaluation

C10 COSATI SUBJECT CATEGORY LIST

A classification system important in the reporting and retrieval of RDT&E information is that established by the Committee on Scientific and Technical Information (COSATI) of the Federal Council on Science and Technology (now defunct). This is a listing of major scientific and technical subject areas, each with a number of second-level component areas. It was established by COSATI in an effort to arrive at a standardized, government-wide classification system to replace the multiplicity of such systems now in

existence. That goal has not yet been achieved, however, the list, variously modified, is in use in several Federal agencies. Most important for readers of this Guide, it is in use by DOD in conjunction with the Defense Technical Information Center (DTIC), for reporting and retrieval of information at the work unit level on all scientific and technical work (DD 1498) and of information on Independent Research and Development. The major subject headings of the COSATI list as modified by DTIC are given below, with an example of the subheadings under the first major subject. The numbering system shown is that used by DOD for task area, project, and work unit level reporting.

DOD Manual 1200.12-M-1 Table 2-2

C10.1 Scientific and Technological Fields and Groups.

- Aeronautics
 - (000500) Aerodynamics
 - (000600) Aeronautics
 - (001300) Aircraft
 - (001400) Aircraft Flight Instrumentation
 - (001500) Air Facilities
- Agriculture
- Astronomy and Astrophysics
- Atmospheric Sciences
- Behavioral and Social Sciences
- Biological and Medical Sciences
- Chemistry
- Earth Sciences and Oceanography
- Electronics and Electrical Engineering
- Energy Conversion (Non propulsive)
- Materials
- Mathematical Sciences
- Mechanical, Industrial, Civil, and Marine Engineering
- Methods and Equipment

- Military Sciences
- Missile Technology
- Navigation, Communications, Detection, and Countermeasures
- Nuclear Science and Technology
- Ordnance
- Physics
- Propulsion and Fuels
- Space Technology
- Control, Guidance, and Navigation—Aerospace Vehicles, Missiles, Aircraft

C11 WORK BREAKDOWN STRUCTURE

A work breakdown structure (WBS) is specified by DOD for application in contracting, planning, and reporting during the engineering development and subsequent stages of acquisition of a defense material item (meaning usually a major system or equipment). A work breakdown structure is a product-oriented family tree composed of hardware, service, etc., which completely defines the project/program. It covers three levels of detail as illustrated by the partial sample of the Aircraft System summary WBS shown below.

Level 1	Level 2	Level 3
Aircraft System	Air Vehicle	Airframe
		Power Plant
		Other Propulsion
		Communications
		Navigation/Guidance
		Fire Control
		Penetration Aids
		Reconnaissance
		Equipment
		Automatic Flight Control
		Central Integrated Checkout
		Antisubmarine Warfare
		Auxiliary Electronics Equipment

Armament
 Auxiliary Armament/
 Weapons Delivery
 Equipment
 Training
 Equipment
 Services
 Facilities
 Etc

MIL-STD-881

C11.1 Ship Work Breakdown Structure (SWBS). NAVSEA has developed a further, extremely detailed structure based upon that contained in Appendix E of MIL-STD-881. Its major groupings are an extension of the Level 3 sub-headings under the WBS Level 2 heading "Ship." The system is cross-indexed to the 9000 series of the Standard Subject Identification Code (see C9.1) and to the Bureau of Ships Consolidated Index (BSCI) (NAVSHIPS 0902 002 2000) which it supersedes but which is still in use in historical data. It is intended to provide a single language

which can be used through the entire ship life cycle. Its use is illustrated below.

WBS Level 2	SWBS Major Groups (WBS Level 3)
Ship	000 General Guidance and Administration
	100 Hull Structure
	101 General Arrangement- Structural Drawings (Element)
	110 Shell and Supporting Structure (Subgroup)
	111 Shell Plating, Surface Ship and Submarine Pressure Hull (Element)
	112 Shell Plating Submarine Non Pressure Hull
	120 Hull Structural Bulkheads
Etc	

NAVSHIPS 0902 002 2000

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only, e.g., 1900.14, not to the effective edition within the series, e.g., 1900.14A.

The "Master Reference List" shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, Department of the Navy Directives Issuance System Consolidated Subject Index.

APPENDIX D TECHNICAL INFORMATION SERVICES

TABLE OF CONTENTS

D1	Scientific and Technical Information Program	D-1
D2	Navy Technical Libraries	D-1
D3	Defense Technical Information Center (DTIC)	D-2
	D3.1 DOD RDT&E Data Bases	D-2
	D3.1.1 Work unit data base (DD 1498)	D-2
	D3.1.2 IR&D data base (DTIC 271)	D-2
	D3.1.3 Technical reports data base (DD 1473)	D-2
	D3.2 DTIC Products and Services	D-2
	D3.2.1 Defense RDT&E On-Line System (DROLS)	D-2
	D3.2.2 Technical Reports Awareness Circular (TRAC)	D-2
	D3.2.3 TRAC Annual Indexes	D-3
	D3.2.4 Special technical report service	D-3
	D3.2.5 Technical report copy service	D-3
	D3.2.6 Bibliographies	D-3
	D3.2.7 Referral service	D-3
	D3.3 Obtaining DTIC Services	D-3
D4	Information Analysis Centers (IAC's)	D-4
	D4.1 Listing of IAC's	D-4
	D4.2 Test Technology Information Center (TTIC)	D-5
D5	Navy Acquisition, Research and Development Information Center (NARDIC)	D-5
D6	Navy Industry Cooperative Research and Development Program (NICRAD)	D-6
D7	Government Industry Data Exchange Program (GIDEP)	D-6
D8	National Technical Information Service (NTIS)	D-7

FKQ6G (NUSC) (200);
 FKQ6H (NAVWPNCEN) (145);
 FKR2A (NAVPRO);
 FKR2B (NAVWPNEINGSUPPACT) (5);
 FKR3A (NAVAIRENGCEN) (50);
 FKR3C (NAVAIRTESTCEN) (50);
 FKR3E (NAVWPNEVALFAC) (8);
 FKR3H (NAVAIRPROPCEN) (19);
 FKR4A (COMPACMISTESTCEN) (145);
 FKR5 (NAVAVIONICCEN) (2);
 FKR7B (NAESU);
 FKR7C (NAVAIRTECHSERVFAC);
 FKR7E (NAVAVNLOGCEN);
 FKR31 (NAVTRASYSCEEN) (25);
 FN3 (NAVSPASUR);
 FR10 (NAVRESCEN, NAVMARCORPSRESCEN);
 FR11 (NAVRESFAC, Anchorage, AK, only);
 FT1 (CNET) (5);
 FT2 (CNATRA) (2);
 FT5 (CNTECHTRA) (2);
 FT23 (FLEBALMISUBTRACEN);
 FT27 (NAVNUPWRTAU);
 FT35 (NAVPHIBSCOL) (2);
 FT37 (NAVSCOLCECOFF);
 FT39 (NAVTECHTRACEN);
 FT43 (SWOSCOLCOM);
 FT44 (NAVDIVESALVTRACEN);
 FT45 (NAVSCOLEOD);
 FT46 (FLEASWTRACEN) (2);
 FT 49 (NAVGMSCOL);
 FT51 (FLEMINEWARTRACEN) (2);
 FT53 (NAVNUPWRSOL);
 FT54 (NAVSUBSCOL);
 FT55 (NAVSCOL);
 FT72 (DPTNAVSC);
 FT74 (NROTCU);
 FT76 (COMBATSYSTECHSCOLSCOM);

FT78 (NAVEDTRAPRODEVCEEN);
 FT85 (TRITRAFAC);
 FT88 (EDOSCOL);
 V6 (CG, 4TH MAW);
 V11 (MCI);
 V12 (CG MCDEC) (15);
 V13 (FLDMEDSERVSCOL);
 V22 (4TH Marine Aircraft Unit).

Copy to: (1 copy unless otherwise shown)

SECDEF(USDA) (8);
 DUSD(CJI) (2);
 ASD (MI&L) (6);
 DPA&E (5);
 ASD(PA) (3);
 ATSD(AE);
 CNO(OP-098R) (300);
 COMSPAWARSYSCOM (SPAWAR 0055) (50);
 NAVSEASYSCOM (CHENG-T) (420);
 NAVPGSCOL (Code 54 Lt) (300);
 Senior Member, Board of Inspection and
 Survey, Naval Air Test Center,
 Patuxent River, MD 20670;
 CCPO-CC Career Development Institute,
 Bldg. 150, Naval Station Anacostia, Washington,
 DC 20375-1502 (400);
 DTIC(ML) Defense Technical Information Center,
 Cameron Station, Alexandria, VA 22314;
 Commandant, U.S. Coast Guard Headquarters,
 400 7th St. SW, Washington, DC 20590 (3);
 Library of Congress, Science and Technology Di-
 vision, Referral Services Section, National
 Referral Center, Washington, DC 20540;
 Department of the Navy Library, Naval Historical
 Center, Washington Navy Yard, Washington,
 DC 20374

OBTAINING ADDITIONAL COPIES

For this edition

Submit request for additional copies of NAVSO P-2457 (Rev 1/87) on DoD Single Line Item Requisition, DD 1348, to the Commanding Officer, Naval Publications and Forms Center, Philadelphia, Pennsylvania 19120, citing Stock No 0515-LP-400-3406

For the next edition

Submit requests to be placed on the distribution list, or for changes in the number of copies through automatic initial distribution, to the Office of the Chief of Naval Research (Attn: OCNR 0111), 800 N Quincy St., Arlington, VA 22217-5000

APPENDIX D

TECHNICAL INFORMATION SERVICES

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

Programs, facilities, services, and organizations are available to meet the information needs of Navy RDT&E personnel (and, to a lesser extent, their active and potential contractors). The more important ones are described in this appendix.

All organizational elements of the Navy performing, contracting for, or authorizing scientific and technical work and studies and analyses are required by SECDEF and SECNAV to query the DOD RDT&E data bases maintained at the Defense Technical Information Center (DTIC) (see D3.1) prior to commencing new research or development work.

DODREG 3200.12-R-1

D1 SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM

The Department of Defense operates a comprehensive, coordinated Scientific and Technical Information Program (STIP) to ensure that scientific and technical information (STI) provides maximum contribution to the advancement of science and technology, permit timely, effective, and efficient conduct and management of DOD research, engineering, and studies programs, eliminate unnecessary duplication of effort and resources, and encourage and expedite the interchange and use of STI. The STIP provides for interchange of STI within and among DOD

components and their contractors, federal agencies and their contractors, and the national and international scientific and technical communities.

DODDIR 3200.12 (SECNAV 3900.43) (SECNAV INST 3900.43)

D2 NAVY TECHNICAL LIBRARIES

Navy (and DOD) technical libraries are vital to effective RDT&E information transfer. They are the activities' access point to most of the technical information services described in this appendix. They provide direct access to technical reports, books, periodicals, and other established library facilities and services tailored to users' needs.

In most instances, Navy terminals for the Defense RDT&E On-Line System (DROLS) maintained by DTIC (see D3.2.1) are located in the technical libraries so that trained library staff can assist RDT&E personnel. If a technical library does not have on-line terminals to DTIC, the librarian can assist in formulating DOD RDT&E data base queries which are then sent to DTIC for processing. Search results are returned by mail.

As a general rule, information gathering efforts involving services described in this appendix should begin by discussions with the activity's librarian.

D3 DEFENSE TECHNICAL INFORMATION CENTER (DTIC)

DTIC is designated to provide a source of STIP services to assist in carrying out STIP policy and administration, operate DOD-wide systems, and serve as a central coordinating point for DOD STI data bases.

DODDIR 3200.12 (SECNAVINST 3900.43)

D3.1 DOD RDT&E Data Bases. Three DOD RDT&E data bases are operated by DTIC. These data bases contain information summaries of on-going work, industry Independent Research and Development (IR&D), and technical reports.

D3.1.1 Work unit data base (DD 1498). This data base provides information concerning who, what, when, where, how, costs, and status of on-going Defense-sponsored research and technology performed at DOD facilities or by contracts/grants. Included is the name and phone number of the scientist or engineer performing the work. DOD components provide this information to DTIC on Research and Technology Work Unit Summaries (DD Form 1498). Historical information can also be compiled from this data base.

DODREG 3200.12-R-1

D3.1.2 IR&D data base (DTIC 271). This data base contains proprietary information on Defense-related in-house work from companies in the DOD-Industry Independent Research and Development (IR&D) program. Because this information is proprietary, use is limited to DOD personnel. DOD contractors provide reports yearly on their IR&D programs. These reports are referenced on DTIC Form 271 which provides information similar to that provided by DD Form 1498.

DODINST 3204.1 SECNAVINST 3900.40

D3.1.3 Technical reports data base (DD 1473). This data base contains bibliographic citations with abstracts and other information on DOD-sponsored scientific and technical reports submitted to DTIC. DOD components and contractors submit this information on the DD Form 1473.

In addition DTIC also acquires, stores, announces, retrieves, and provides secondary distribution of scientific and technical documents directly to registered users.

MIL-STD-847 (SECNAV 3900.29)

D3.2 DTIC Products and Services

D3.2.1 Defense RDT&E On-Line System (DROLS). Remote computer terminals provide on-line access to the DOD RDT&E data bases listed in D3.1. As of the date of this edition more than 150 dedicated and 768 dial-up on-line terminals for the DROLS are available. Specific Navy locations of these terminals can be obtained from your activity's technical library or from DTIC.

DTIC-registered organizations in Washington, D.C., Los Angeles and Boston areas may make DROLS searches through terminals providing this special access.

These remote terminals are located at DTIC, Cameron Station, Alexandria, Virginia, Defense Contract Administration Services Region, 11099 South La Cienega Boulevard, Los Angeles, California, and Building 1103, Hanscom Air Force Base, Bedford, Massachusetts.

D3.2.2 Technical Reports Awareness Circular (TRAC). Since the Technical Abstract Bulletin (TAB) was reclassified in January 1982, there has been a decrease in the number of TAB subscribers and in TAB's usefulness as an announcement product.

Therefore, a new unclassified publication—Technical Reports Awareness Circular

(TRAC)—has been created to replace TAB beginning in Jan. 1987. TRAC will include all of DTIC's newly accessioned documents (including unclassified unlimited reports) and will be issued on a monthly basis.

The citations will be arranged in AD number order and will include title, corporate author, personal author, contract, and report number indexes. It will not contain abstracts or descriptors. A new article, important telephone numbers, and brief information on DTIC's products and services will also be included.

Semiannual and annual cumulative indexes will be published on microfiche. The Notices of Changes in Classification, Distribution, and Availability—now included as part of TAB—will be published separately on a quarterly basis with the fourth quarter being an annual cumulative issue.

TRAC should prove to be a helpful announcement, reference and ordering tool for all DTIC users.

D3.2.3 TRAC annual indexes. Classified CONFIDENTIAL. Available only in microfiche.

D3.2.4 Special technical report service. DTIC offers an Automatic Document Distribution (ADD) service which provides microfiche copies of newly accessioned documents which match a user's subject-interest profile.

Upon request, DTIC will make a computer search of its collection to locate technical reports pertinent to a user's research problem or project. The requesting organization specifies the time parameters of search.

D3.2.5 Technical report copy service. Registered users may request copies of technical reports in either paper hard copy or microform.

D3.2.6 Bibliographies. These are listings of technical reports related to specific subjects. A computerized search is made of the DTIC collection listing applicable reports with control numbers, informative abstracts, and descriptive data on research projects.

The three main types of bibliographies offered by DTIC are Report, Current Awareness, and Direct Response. They differ in depth of search, response time, and product format.

Report (Demand) Bibliography—A tailor-made literature search on a particular subject conducted at the request of a user.

Current Awareness Bibliography (CAB)—A customized, automated bibliography service based on recurring subject needs of DTIC users. Every two weeks the users subject interest profile is matched against information contained in newly accessioned documents.

Direct Response Bibliography—A tailored response to a specific request received in writing or through the Telex Telecommunications System at Headquarters, DLA.

D3.2.7 Referral service. DTIC's referral service provides information concerning DOD-sponsored specialized sources of scientific and technical knowledge. When users require information exceeding that contained in DTIC, this service directs them to these potential sources of expertise.

In addition, DTIC periodically issues a *Referral Data Bank Directory* which lists specialized scientific and technical information sources. All the listed information sources are operated or supported by the DOD or other Federal agencies. Types of organizations included are information analysis centers, data centers, information offices, libraries, laboratories, testing directorates, information exchanges, etc.

The directory gives detailed descriptive information on the subject areas, services and materials available, publications issued, and access limitations of each activity listed.

D3.3 Obtaining DTIC Services. Research and development activities within the United States Government and their associated contractors, subcontractors, and grantees (with current government contracts) are eligible to receive most of the information from DOD data bases.

located at DTIC. In addition, research and development organizations without current contracts may become eligible for service through a military service authorization under the Defense Potential Contractors Program.

There are collections, however, which contain proprietary data or information compiled for the specific purpose of DOD management decisions which are made available to Defense components only.

All Navy (and DOD) activities are registered with DTIC. Normally, the Navy activity's librarian is the DTIC liaison.

To assist other organizations in acquiring DTIC services, the Center provides a Joint Services Regulation (DIAR 4185-10) entitled, "Certification and Registration for Access to DOD Scientific and Technical Information." This regulation outlines the necessary procedures and includes the DOD forms required for registration. Requests for the regulation or for additional information concerning DTIC should be addressed to:

Defense Technical Information Center
Attn: DTIC-DDR-2
Building No. 5, Cameron Station
Alexandria, VA 22304-6145
Telephone: Comm. (703) 468-7100
Auto. X 284-6871

DIAR 4185-10

D4 INFORMATION ANALYSIS CENTERS (IACs)

The Defense Department supports 11 information analysis centers (IACs) which are organized to provide information analysis services to the Department of Defense. The IACs are located at the following locations: 1. Defense Information Analysis Center (DIAC), Alexandria, VA; 2. Defense Information Analysis Center (DIAC), Arlington, VA; 3. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 4. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 5. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 6. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 7. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 8. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 9. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 10. Defense Information Analysis Center (DIAC), Fort Belvoir, IL; 11. Defense Information Analysis Center (DIAC), Fort Belvoir, IL.

functions. In addition, technical expertise is provided by practicing scientists and engineers associated with appropriate research and development facilities.

Each center gathers information in its specialized area of interest, reviews, analyzes, evaluates, synthesizes, condenses, and summarizes this information, and distributes it to individual users. These centers also provide critical reviews, state-of-the-art monographs, data compilations, substantive answers to questions, and access to technical advice from subject authorities.

Most DOD IACs are on a service charge basis for both in-house and contract users. Information on the particular IAC most likely to provide information for the user's problem may be obtained from DTIC. Contract data and detailed information sources are included in the *DTIC Referral Data Base Directory* and the *Directory of Federally Supported Information Analysis Centers*. Both publications may be purchased from the Government Printing Office.

DDPREF-1200-1R DTIC TR 864-404-6700

D4.1 Listing of IACs containing a listing of IACs may be obtained from the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145. The listing is available in the form of a booklet, *DTIC Referral Data Base Directory*, and a *Directory of Federally Supported Information Analysis Centers*.

For more information on the IACs, contact the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145.

For more information on the IACs, contact the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145.

For more information on the IACs, contact the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145.

For more information on the IACs, contact the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145.

For more information on the IACs, contact the Program Manager, Defense Information Analysis Center, Alexandria, VA 22304-6145.

Hydraulic Engineering Information Analysis Center

Infrared Information Analysis Center

Manufacturing Technology Information Analysis Center

*Metals and Ceramics Information Center

*Meta-Matrix Composites Information Analysis Center

*Nondestructive Testing Information Analysis Center

*Plastics Technical Evaluation Center

Reverberant Sound Intelligibility Information Analysis Center

Rheology Analysis Center

Shock and Vibration Information Center

Solid Mechanics Information Analysis Center

Surface Acoustic Wave Information Analysis Center

Taxonomy Information Center

Thermal Properties Materials Information Analysis Center

D4.2 Test Technology Information Center

TTIC, a Department of Defense (DOD) TTIC, is a test technology service. TTIC maintains and executes a program of information regarding research and development in the field of test technology. TTIC provides information to Federal agencies and contractors. TTIC also provides customized information and dissemination of information on test technology. TTIC searches for response to specific information requests and is a data source for information on test technology. TTIC is a test technology service.

1. TTIC, Alexandria, VA

2. TTIC, Washington, DC

3. TTIC, Arlington, VA

4. TTIC, Fort Belvoir, IL

5. TTIC, Fort Belvoir, IL

6. TTIC, Fort Belvoir, IL

D5 NAVY ACQUISITION, RESEARCH AND DEVELOPMENT INFORMATION CENTER (NARDIC)

The Navy Acquisition, Research and Development Information Center (NARDIC) is the focal point within the DON for making information regarding research and development planning and requirements available to industry representatives who are registered for DOD information services.

NARDIC has three offices for the convenience of industry: Alexandria, Virginia; Pasadena, California; and Wright-Patterson AFB, Ohio. At Alexandria, NARDIC is colocated with counterpart Army and Air Force offices, creating a Tri-Service Industry Information Center. At Pasadena and Wright-Patterson AFB NARDICs are colocated with counterpart Air Force offices.

In the Washington, D.C. area the NARDIC representative is located in the Headquarters U.S. Army, Materiel Command (AMC). The mailing address is:

Navy Acquisition, Research and Development Information Center
5001 Eisenhower Avenue
Alexandria, Virginia 22333-0001
Telephone Comm. (202) 274-9315
Auto X-284-9315

On the West Coast, the NARDIC representative is located in the Office of Naval Research detachment. The mailing address is:

Navy Acquisition, Research and Development Information Center
Naval Ocean Systems Center
1030 F. Green Street
Pasadena, California 91106
Telephone Comm. (818) 792-5182
Auto X-360-2452/6

At Wright-Patterson AFB, the NARDIC representative is located in Area B, Bldg. 22, Room S122 in the Air Force Wright Aeronautical Laboratory. The mailing address is:

Navy Acquisition, Research and Development Information Center
Air Force Wright Aeronautical Laboratory
(AFWAL GLIST)
Wright-Patterson AFB, Ohio 45433
Telephone: Comm. (513) 258-4261
Auto. X-785-5572

Each NARDIC office provides a reading room where representatives of qualified organizations may review those documents relevant to the R&D capability of the organization.

The services of NARDIC are available to representatives of industrial, scientific, or other organizations registered for access to DOD (DTIC) information services. An organization may register for DOD information services as either a contractor or potential contractor.

OPNAVINST 3910.19

D6 NAVY/INDUSTRY COOPERATIVE RESEARCH AND DEVELOPMENT PROGRAM (NICRAD)

The Department of the Navy/Industry Cooperative Research and Development (NICRAD) Program was established to inform the scientific and technical community of the problems confronting the DOD and the Navy. The NICRAD program provides a mechanism for interchange of technical information with civilian scientists and engineers and for facilitating technology transfer on a cooperative, no-cost, controlled basis.

Through the NICRAD program both classified and unclassified technical information on Navy requirements and existing R&D is provided to nongovernment activities. NARDIC and DTIC services are available to NICRAD participants. Participation is accomplished through the execution of a policy agreement with a NICRAD sponsor. Firms, individuals, or activities with existing R&D capability and a reasonable capability of receiving and executing a program of R&D are eligible. Additional

information can be obtained from the NARDIC offices (see D5).

OPNAVINST 5500.33;

Directives listed following the introduction to a section generally apply to all the following information in the section and are not repeated

D7 GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM (GIDEP)

The Government-Industry Data Exchange Program is a cooperative activity between Federal Government and industry participants sponsored by the Joint Logistics Commanders. The program provides participants with automatic interchange of technical data related to parts, components and materials utilized in commercial/industrial, military, energy, and space systems.

Participation in this program does not require generation of any new data not required by an existing contract. GIDEP is simply a mechanism to ensure that unclassified and unlimited rights technical data required to be delivered under a contract is shared with the technical community to enable cost savings on a reciprocal basis.

There are four GIDEP data interchanges/bases:

a. Engineering Data Interchange—contains engineering evaluation and qualification test reports, non-standard parts justification data, parts and materials specifications, manufacturing processes, and other related engineering data on parts, components, materials, and processes.

b. Reliability-Maintainability Data Interchange—contains failure rate/mode and replacement rate data on parts, components and materials based on field performance information and/or reliability demonstration tests of equipment, sub-systems, and systems. Also includes reports on R&M practices and procedures.

c. **Failure Experience Data Interchange**—contains objective failure information on parts, components, processes, fluids, materials, and safety and fire hazards. Also includes data from ALERTS and SAFE ALERTS as well as other problem information and failure analyses.

d. **Metrology Data Interchange**—contains test equipment calibration procedures and metrology-related engineering data on test systems, calibration systems, and measurement technology. It is a repository for the National Bureau of Standards metrology data.

Further information on GIDEP may be obtained from:

GIDEP Operations Center
Fleet Analysis Center (Code 3061)
Corona, CA 91720-5000
Telephone Com (714) 736-4677
Auto 933-4677

D8 NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

The National Technical Information Service (NTIS) of the Department of Commerce is the

primary focal point within the Federal Government for the collection, announcement, and dissemination of unclassified technical reports and data. More than 50 products and services are available from NTIS to industry and the general public on a purchase basis.

Current abstracts of NTIS documents and other records in various categories of interest are published in weekly Abstract Newsletters. These are indexed. An all-inclusive biweekly journal "Government Reports Announcements and Index" is published and available on an annual subscription basis.

NTIS data bases are accessible through commercial services. They can be searched at nominal cost through most Navy technical libraries.

Information on the NTIS services is available from local technical libraries or from:

National Technical Information Service
U.S. Department of Commerce
Springfield, Virginia 22161
Telephone (703) 487-4600

SELECTED REFERENCES ON TECHNICAL INFORMATION SERVICES

DODDIR 3200.12 (SECNAVINST 3900.43), "DOD Scientific and Technical Information Program"

DODREG 3200.12-R-1, "Research and Technology Work Unit Information System Regulation"

DODREG 3200.12-R-2, "Centers for Analysis of Scientific and Technical Information"

DODREG 3200.12-R-3, "Dissemination of DOD Technical Information"

DODINST 3204.1 (SECNAVINST 3900.40), "Independent Research and Development"

MIL-STD-847B (SECNAV 3900.29), "Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense"

SECNAVINST 3900.29, "Standard Format Requirements for Scientific and Technical Reports"

SECNAVINST 3900.40, "Policy and Assignment of Responsibilities for the Independent Research and Development Program"

SECNAVINST 3000.43, "Navy Scientific and Technical Information Program (STIP)"

OPNAVINST 3910.19, "Release of Research and Development Planning and Requirements Documents"

OPNAVINST 5500.33, "NICRAD (Department of the Navy/Industry Cooperative Research and Development) Program"

APPENDIX E ORGANIZATIONS

TABLE OF CONTENTS

E1	Office of the Secretary of Defense (OSD)	E-2
E1.1	Under Secretary of Defense, Research and Engineering (USDRE)	E-2
E1.1.1	Defense Advanced Research Projects Agency (DARPA)	E-2
E1.2	Under Secretary of Defense for Policy (USDP)	E-2
E1.3	Director of Operational Test and Evaluation (DOT&E)	E-2
E1.4	Assistant Secretary of Defense (Comptroller) (ASD(C))	E-2
E1.5	Assistant Secretary of Defense (Acquisition and Logistics) (ASD(A&L))	E-2
E1.5.1	Weapon Support Improvement Group (WSIG)	E-4
E1.6	Director, Program Analysis and Evaluation (DPA&E)	E-4
E1.7	Defense Acquisition Executive (DAE)	E-4
E1.8	Defense Agencies	E-4
E1.8.1	The Defense Nuclear Agency (DNA)	E-4
E1.8.2	Defense Communications Agency (DCA)	E-5
E1.8.3	Defense Contract Audit Agency (DCAA)	E-5
E1.8.4	Defense Intelligence Agency (DIA)	E-5
E1.8.5	Defense Logistics Agency (DLA)	E-5
E1.8.6	National Security Agency (NSA)	E-6
E2	Office of the Secretary of the Navy	E-6
E2.1	Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S))	E-6
E2.1.1	Duties and responsibilities	E-6
E2.1.2	Relationships	E-6
E2.1.3	Organization	E-6
E2.2	Office of Program Appraisal (OPA)	E-8
E3	Office of the Chief of Naval Operations (OPNAV)	E-8
E3.1	Deputy Chief of Naval Operations (Manpower, Personnel, and Training) (DCNO(MPT)) (OP-01)	E-8
E3.2	Deputy Chief of Naval Operations (Submarine Warfare) (OP-02)	E-10

E3 3	Deputy Chief of Naval Operations (Surface Warfare) (OP-03)	E-10
E3 4	Deputy Chief of Naval Operations (Logistics) (OP-04)	E-10
E3 5	Deputy Chief of Naval Operations (Air Warfare) (OP-05)	E-10
E3 6	Deputy Chief of Naval Operations (Plans, Policy, and Operations) (OP-06)	E-10
E3 7	Director, Navy Program Planning (OP-090)	E-11
E3 7 1	General Planning and Programming Division (OP-90)	E-11
E3 7 2	Program Resources Appraisal Division (OP-91)	E-11
E3 8	Director, Naval Medicine (OP-093)	E-11
E3 9	Director, Space, Command and Control (OP-094)	E-11
E3 10	Director, Naval Warfare (OP-095)	E-11
E3 10 1	Oceanographer of the Navy (OP-006)	E-12
E3 11	Director, Research, Development, and Acquisition (RD&A) (OP-098)	E-12
E3 11 1	Special Assistant for Intelligence (OP-098D)	E-12
E3 11 2	Assistant for Medical and Allied Sciences (OP-098E)	E-12
E3 11 3	Assistant for International Research and Development (OP-098F)	E-12
E3 11 4	Assistant for Research, Development, and Acquisition Management (OP-098R)	E-12
E3 11 5	Navy Member, DOD Air Munitions Requirements and Developments (AMRAD) Committee (OP-098W)	E-14
E3 11 6	R&D Programming and Budgeting Division (OP-980)	E-14
E3 11 7	Undersea and Strategic Warfare Development Division (OP-981)	E-14
E3 11 8	Tactical Air, Surface, and Electronic Warfare Development Division (OP-982)	E-14
E3 11 9	Test and Evaluation Division (OP-983)	E-14
E3 11 10	Space, Command and Control Development Division (OP-986)	E-14
E3 11 11	Technology Assessment Division (OP-987)	E-14
E3 12	Activities Reporting to CNO	E-14
E3 12 1	Naval Systems Commands	E-14
E3 12 2	Major Program Offices	E-14
E3 12 3	Naval Medical Command	E-14
E3 12 4	Naval Oceanography Command	E-14
E4	Naval Systems Command	E-14
E4 1	Material Support Responsibilities of Systems Commanders	E-14
E4 2	Naval Air Systems Command	E-15
E4 3	Naval Facilities Engineering Command	E-15
E4 4	Naval Sea Systems Command	E-15
E4 5	Naval Supply Systems Command	E-15
E4 6	Space and Naval Warfare Systems Command	E-18

E5	Major Program Offices	E-18
E5.1	Strategic Systems Program Office (SPPO)	E-18
E5.2	Saudi Naval Support Program Office	E-18
E5.3	Navy Joint Tactical Information Distribution System (JTIDS) Program	E-18
E5.4	High Frequency Anti-Jam Program (HFAJ)	E-18
E5.5	Advanced Tactical Aircraft Protection Systems (ATAP)	E-18
E5.6	Undergraduate Jet Flight Training System	E-20
E5.7	Joint Services Advanced Vertical Lift Aircraft	E-20
E6	Marine Corps Organization for RDT&E	E-20
E6.1	HQMC Organization for RDT&E	E-20
E6.1.1	Deputy Chief of Staff for Research, Development, and Studies (DC/S RD&S)	E-20
E6.1.1.1	Chief Scientist of the Marine Corps	E-20
E6.1.1.2	Program and Budget Branch	E-21
E6.1.1.3	Developments Branch	E-21
E6.1.1.4	Studies Branch	E-21
E6.1.2	Deputy Chief of Staff for Aviation (DC/S Avn)	E-21
E6.1.3	Deputy Chief of Staff for Manpower (DC/S Mpr)	E-21
E6.1.4	Director of Intelligence (DirIntel)	E-21
E6.1.5	Deputy Chief of Staff for Plans, Policies, and Operations (DC/S PPO)	E-21
E6.1.6	Deputy Chief of Staff for Installations and Logistics (DC/S I&L)	E-21
E6.1.7	Deputy Chief of Staff for Requirements and Programs (DC/S R&P)	E-21
E6.1.8	Director, Command, Control, Communications and Computers (C ⁴) Division (DirC ⁴)	E-22
E6.2	Marine Corps Development and Educational Command (MCDEC)	E-22
E6.2.1	Commanding General, MCDEC (CG,MCDEC)	E-22
E6.2.2	Development Center, MCDEC	E-22
E6.3	Marine Corps RDT&E Liaison Organization	E-22
E6.4	Fleet Marine Forces (FMF)	E-22
E7	Office of the Chief of Naval Research (OCNR)	E-22
E7.1	Office of Naval Research (ONR)	E-23
E7.2	Office of Naval Technology (ONT)	E-25
E8	Naval Medical Command (NAVMEDCOM)	E-25
E8.1	Commanding Officer, Naval Medical Research and Development Command	E-25
E9	Committees	E-25

E9 1	Defense Science Board (DSB)	E-25
E9 2	Joint Requirements and Management Board (JRMB)	E-25
E9 3	Naval Research Advisory Committee (NRAC)	E-26
E9 4	Marine Corps Program Decision Meeting (MCPDM)	E-26
E9 5	CNO Executive Board (CEB)	E-26
E9 5 1	Ship Characteristics and Improvement Board (SCIB)	E-26
E9 5 2	Air Characteristics Improvement Board (ACIB)	E-26
E9 5 3	Advanced Technology Panel (ATP)	E-27
E9 6	Defense Resources Board (DRB)	E-27
E9 7	Navy Program Decision Meetings (NPDM)	E-27
E9 8	Acquisition Review Board (ARB)	E-27
E9 9	Board for Naval Studies—National Academy of Sciences	E-27
E9 10	Program Development Review Committee (PDRC)	E-27
E9 11	DON Program Strategy Board (DPSB)	E-28

APPENDIX E ORGANIZATIONS

NOTE For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

NOTICE Pursuant to recommendations of the President's Blue Ribbon Commission on Defense Management (Packard Commission) and Congressional action, organization for acquisition and RDT&E in OSD was in transition as this 10th edition of the Guide went to press.

While the information in section E1 is based on official charters in effect at deadline time, much of it is now obsolete. The following is quoted from the SECDEF memo of 30 September 1986, which assigned the new Under Secretary of Defense (Acquisition) DOD-wide responsibilities for acquisition matters:

This memorandum prescribes the interim and initial authorities, functions, and responsibilities of the USD(Acquisition) pending issuance of a formal charter and the outcome of legislation now pending before Congress. They include:

- Serving as the Defense Acquisition Executive and supervising the DOD acquisition system
- Setting policy for acquisition matters, including procurement and research and development
- Serving as chairman of the Joint Requirements and Management Board
- Setting policy for the administrative oversight of defense contractors
- Developing appropriate guidance concerning the auditing of defense contractors.

Effective immediately, the Director of Defense Research and Engineering, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, the Assistant Secretary of Defense for Acquisition and Logistics, the Assistant Secretary of Defense for Research and Technology, the Assistant to the Secretary of Defense for Atomic Energy, and their subordinate components shall report to the USD(Acquisition).

E1 OFFICE OF THE SECRETARY OF DEFENSE (OSD)

Figure E1 is an interim organization chart issued pending promulgation of official charters expected early in 1987.

The Secretary of Defense is supported by the Office of the Secretary of Defense. The responsibilities of assistant secretaries with major involvement in RDT&E are summarized in the following paragraphs with particular emphasis on the Under Secretary of Defense for Research and Engineering (see Figure E-1).

E1.1 Under Secretary of Defense, Research and Engineering (USDRE).

By public law, the position of USDRE was abolished and the positions of Under Secretary of Defense (Acquisition) (USD(A)) and Director of Defense Research and Engineering (DDR&E) established. As of the 31 December 1986 information cut-off for this 10th edition, applicable charters had not been promulgated, cancelled, or modified. No information was available on the duties of DDR&E and no DDR&E had been appointed. (See box on page E-1 for preliminary information on the duties of USD(A)).

DODDIR 5129.1

E1.1.1 Defense Advanced Research Projects Agency (DARPA). The Defense Advanced Research Projects Agency is a separately organized operating research and development agency of the Department of Defense under the direction and supervision of the Under Secretary of Defense, Research and Engineering. It is responsible for basic and applied research and development for such advanced projects as may be designated by the Secretary of Defense. The Agency utilizes the services of the military departments, other government agencies, individuals, private business entities, educational, and research institutions to carry on its projects.

DODDIR 5105.41

E1.2 Under Secretary of Defense for Policy (USDP). The Under Secretary of Defense for Policy is the principal advisor and assistant to the Secretary of Defense for all matters concerned with the integration of Departmental plans and policies with overall national security objectives. The USDP represents the Department of Defense

as directed in matters involving the National Security Council, the Department of State, the Intelligence Community, and other departments, agencies, and interagency groups with responsibilities in the national security area. The USDP oversees, develops, and recommends, as appropriate, policies with regard to nuclear-related matters, intelligence, and plans and requirements for and capabilities of existing or proposed U.S. or foreign forces.

The USDP is a permanent member of the JRMB.

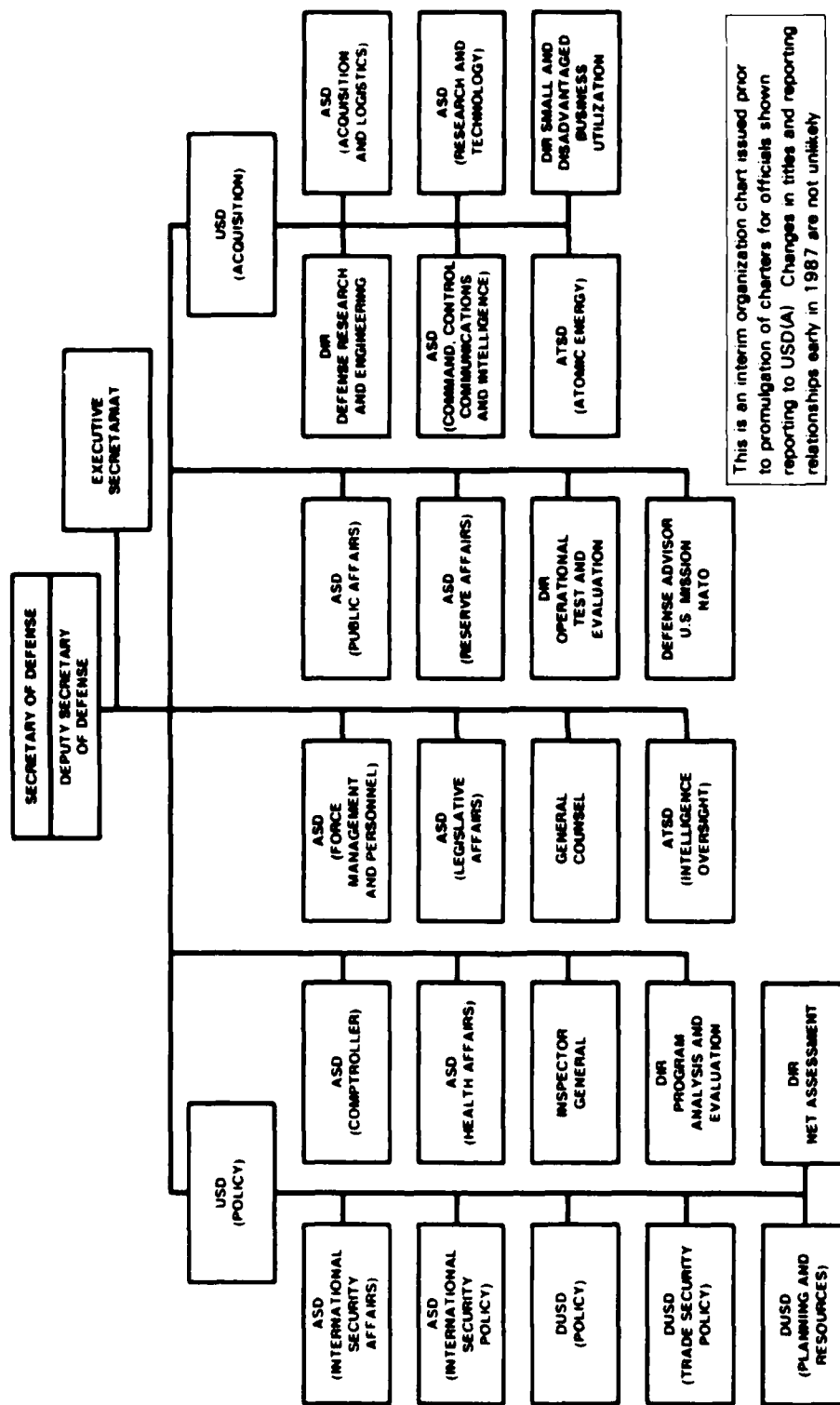
DODDIR 5111.1

E1.3 Director of Operational Test and Evaluation (DOT&E). The DOT&E is the principal staff advisor and staff assistant to SECDEF on OT&E (see G2.2 for discussion of DOT&E responsibilities).

E1.4 Assistant Secretary of Defense (Comptroller) (ASD(C)). The Assistant Secretary of Defense (Comptroller) advises and assists the Secretary of Defense in the performance of the Secretary's programming, budgetary, and fiscal functions and organizational and administrative matters pertaining to these functions; provides for the design and installation of resource management systems throughout DOD; and collects, analyzes, and reports resource management information for the Secretary of Defense and, as required, for the Office of Management and Budget, the Congress, the General Accounting Office, and other agencies outside the DOD. The ASD(C) supervises, directs, and reviews the preparation and execution of the DOD budget and is responsible for policy matters pertaining to automatic data processing and central data services. The ASD(C) is a permanent member of the JRMB.

DODDIR 5118.3

E1.5 Assistant Secretary of Defense (Acquisition and Logistics) (ASD(A&L)). ASD(A&L) is Principal Staff Assistant and Advisor to SECDEF for management of DOD acquisition, logistics, installations, associated support functions, and related matters. ASD(A&L) is a permanent member of the JRMB and DRB.



This is an interim organization chart issued prior to promulgation of charters for officials shown reporting to USD(A). Changes in titles and reporting relationships early in 1987 are not unlikely.

Figure E-1. Office of the Secretary of Defense

Functional areas in which the ASD(A&L) has responsibilities include: weapon systems acquisition process, Integrated Logistic Support, industrial base and resources, Defense Standardization and Specifications Program, international acquisition policy, quality, transition to production, manufacturing technology, technical data management, and design to cost.

DODDIR 5128.1

E1.5.1 Weapon Support Improvement Group (WSIG). The WSIG is the principal advisory group to the JRMB for weapon support. The WSIG provides independent assessments to the JRMB for each review, including adequacy of manpower; training, logistic planning and resources; initial and long-term support concept; reliability and maintainability approach, improvements, readiness objectives, and acquisition strategy as applied to reducing support risks.

E1.6 Director, Program Analysis and Evaluation (DPA&E). The Director, Program Analysis and Evaluation has prime responsibility within DOD for systems analysis, the responsibilities, of which include weapon systems and major material items and support systems. The DPA&E develops policies and provides guidance upon which planning and program projections are based; performs analyses and evaluations of plans, programs, and budget submissions; identifies issues; and evaluates alternative programs. The DPA&E is a permanent member of the JRMB.

DODDIR 5141.1

E1.7 Defense Acquisition Executive (DAE). The DAE is designated by the SECDEF, and is the principal advisor and staff assistant for the acquisition of defense systems and equipment. The Under Secretary of Defense (acquisition) is designated as the DAE, whose responsibilities include:

- Integrate and unify the management process, policies, and procedures for defense system acquisition

- Monitor compliance, by the DOD components, with the policies and practices in OMB Circular A-109, DODDIR 5000.1, and DODINST 5000.2
- Ensure that the requirements and viewpoints of the functional areas are given consideration during staff and JRMB deliberations, and are integrated in the recommendations sent to the SECDEF
- Ensure consistency in applying the policies regarding NATO RSI for major systems.

DODDIR 5000.1

E1.8 Defense Agencies

E1.8.1 The Defense Nuclear Agency (DNA). The Defense Nuclear Agency (DNA) is responsible for consolidated management and direction for the Department of Defense nuclear weapons, weapons effects, and nuclear weapons test programs. It maintains overall surveillance and provides direction, coordination, advice, or assistance, as appropriate, on major actions affecting the nuclear stockpile including composition, development, production, allocation, storage, modification, maintenance, retirement, and stockpile management services. In carrying out this responsibility, DNA acts as the central coordinating agency for the Department of Defense with the Nuclear Regulatory Commission (NRC) on matters pertaining to nuclear weapons; advises and assists the Joint Chiefs of Staff in the development of recommendations concerning the stockpile composition, allocation, and dispersal of nuclear weapons; and plans, programs, conducts, or sponsors a variety of training activities.

The DNA is organized into a headquarters in Washington, D.C., a Test Command and a Field Command in Albuquerque, New Mexico, and the Armed Forces Radiobiology Research Institute in Bethesda, Maryland.

DODDIR 5105.31

E1.8.2 Defense Communications Agency (DCA). The mission of the DCA is to (1) ensure that the Defense Communications System (DCS) will be so planned, engineered, established, improved, and operated as to effectively, efficiently, and economically meet the long-haul, point-to-point telecommunications requirements of the Department of Defense to provide communications (a) from the President to and from the Secretary of Defense, the Joint Chiefs of Staff, and other governmental agencies, (b) from the Secretary of Defense and Joint Chiefs of Staff to and between the military departments and the unified and specified commands, (c) from the military departments to and between their major commanders and subordinate fixed headquarters, and (d) from the unified and specified commands to and between their component and subordinate commands, (2) obtain the maximum economy and efficiency in the allocation and management of Department of Defense communications resources, (3) provide for systems engineering and technical supervision of technical support for the National Military Command System and of assigned related systems

DODDIR 5105.19 (OPNAV 5410.12)

E1.8.3 Defense Contract Audit Agency (DCAA). The purpose of DCAA is to perform all necessary contract audit for the Department of Defense and to provide accounting and financial advisory services regarding contracts and subcontracts to all components of the Department of Defense who are responsible for procurement and contract administration. These services are provided in connection with the negotiation, administration, and settlement of contracts and subcontracts. The agency also provides contract audit service to other government agencies under appropriate arrangements

DCAA consists of an agency headquarters office and six regional offices. The regional offices manage over 300 field audit offices located throughout the United States and overseas. These field audit offices are called branch, resident, and procurement liaison offices. The agency headquarters exercises worldwide direction and control of the agency. The regional offices

and their respective field audit offices are responsible for carrying out the contract audit program within their respective regions

DODDIR 5105.36

E1.8.4 Defense Intelligence Agency (DIA). The mission of the DIA is to satisfy, or to ensure the satisfaction of, the foreign intelligence requirements of the Secretary of Defense, the Joint Chiefs of Staff, DOD components and other authorized recipients, and to provide the military intelligence contribution to national intelligence. In carrying out this mission, the Director, DIA, advises the Secretary of Defense on intelligence matters, participates in the JRMB process by providing threat descriptions in support of systems acquisitions, acts as management authority for certain intelligence information systems, maintains a strong DOD scientific and technical intelligence program, and establishes, conducts or recommends RDT&E programs to carry out intelligence responsibilities. The Director, DIA, assigns tasks and issues instructions or guidance, through the Secretary of Defense, to DOD components as necessary to carry out functions assigned

DODDIR 5105.21

E1.8.5 Defense Logistics Agency (DLA). The DLA mission is to (1) function as an integral element of the Defense military logistics system and, as such, direct its efforts and operations toward logistics support of the missions of the Military Departments and the Unified and Specified Commands under all conditions of peace and war, (2) provide effective and economical support to the military Services, other DOD components, Federal civil agencies, foreign governments, and others as authorized, for assigned material commodities and items of supply, logistics services directly associated with the supply management function, and other support services as directed by the Secretary of Defense, including automatic data processing under the policy guidance of the ASD (Comptroller); and (3) administer the operation of DOD programs as assigned.

One of DIA's responsibilities under its mission is to provide assigned contract administration service in support of the Military Departments, other DOD components, Federal civil agencies, and, when authorized, to foreign governments and others.

DIA activities providing services in support of RDT&E organizations include the Defense Technical Information Center (DTIC) (see D2) and the Defense Contract Administration Services Regions (DCASR).

The nine DCASRs provide contract administration services including the performance of contract administration, production, quality assurance, data and financial management activities, and administration of small business labor surplus programs within the United States and such external areas as specifically authorized.

DODDIR 5105.22

E1.8.6 National Security Agency (NSA)

The National Security Agency has two primary missions — a security mission and an intelligence information mission. The responsibilities of the Director, National Security Agency include: (1) prescribing certain security principles, doctrines, and procedures for the U.S. Government; (2) organizing, operating, and managing certain activities and facilities for the production of intelligence information; (3) organizing and coordinating the research and engineering activities of the U.S. Government which are in support of the Agency's assigned functions; and (4) regulating certain communications in support of Agency missions.

DODDIR 5100.23

E2 OFFICE OF THE SECRETARY OF THE NAVY

SECNAVINSTS 5430.7, 5430.67

E2.1 Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S)).

As the principal staff office of the Secretary of the Navy, the Assistant Secretary of the Navy (Research, Engineering, and Systems) (ASN(R,E&S)) is responsible for the research, engineering, and systems activities of the Navy. The ASN(R,E&S) is the principal staff office of the Secretary of the Navy for all matters relating to research, engineering, and systems.

E2.1.1 Duties and responsibilities. The Assistant Secretary of the Navy (Research, Engineering, and Systems) is responsible for all matters related to research, engineering, test, and evaluation efforts within the Department of the Navy, including management of the appropriation RDT&E-N, oceanography, ocean engineering, and closely related matters, the technical aspects of production and maintenance or alteration of material, Navy acquisition programs up to the point at which the decision is made to transition to full-scale production, including policy and administration of affairs related thereto, with the exception of the acquisition of naval ships funded by the appropriation SCN (see Figure E-2).

E2.1.2 Relationships. In the performance of the above responsibilities, the ASN(R,E&S) is responsible for liaison with the Under Secretary of Defense for Research and Engineering and with Assistant Secretaries of Defense as appropriate. The ASN(R,E&S) consults with the Chief of Naval Operations and the Commandant of the Marine Corps on the planning, programming, status, and progress and with the Commander NAVMEDCOM on the execution of RDT&E programs. The ASN(R,E&S) maintains active liaison with the Assistant Secretary of the Army for Research, Development, and Acquisition and the Assistant Secretary of the Air Force for Research, Development, and Logistics.

The ASN(R,E&S) is also responsible for supervision of the Office of Naval Research.

E2.1.3 Organization. In addition to a Principal Deputy, ASN(R,E&S) has an Executive Assistant/Naval Aide, and a Special Assistant/Marine Aide. (See Figure E-2).

Staff elements are headed by Deputy ASNs for Surface Warfare, for Command, Control, Communications, Intelligence, and Space, for Air Warfare, and for Acquisition Management, International Programs, and Congressional Support.

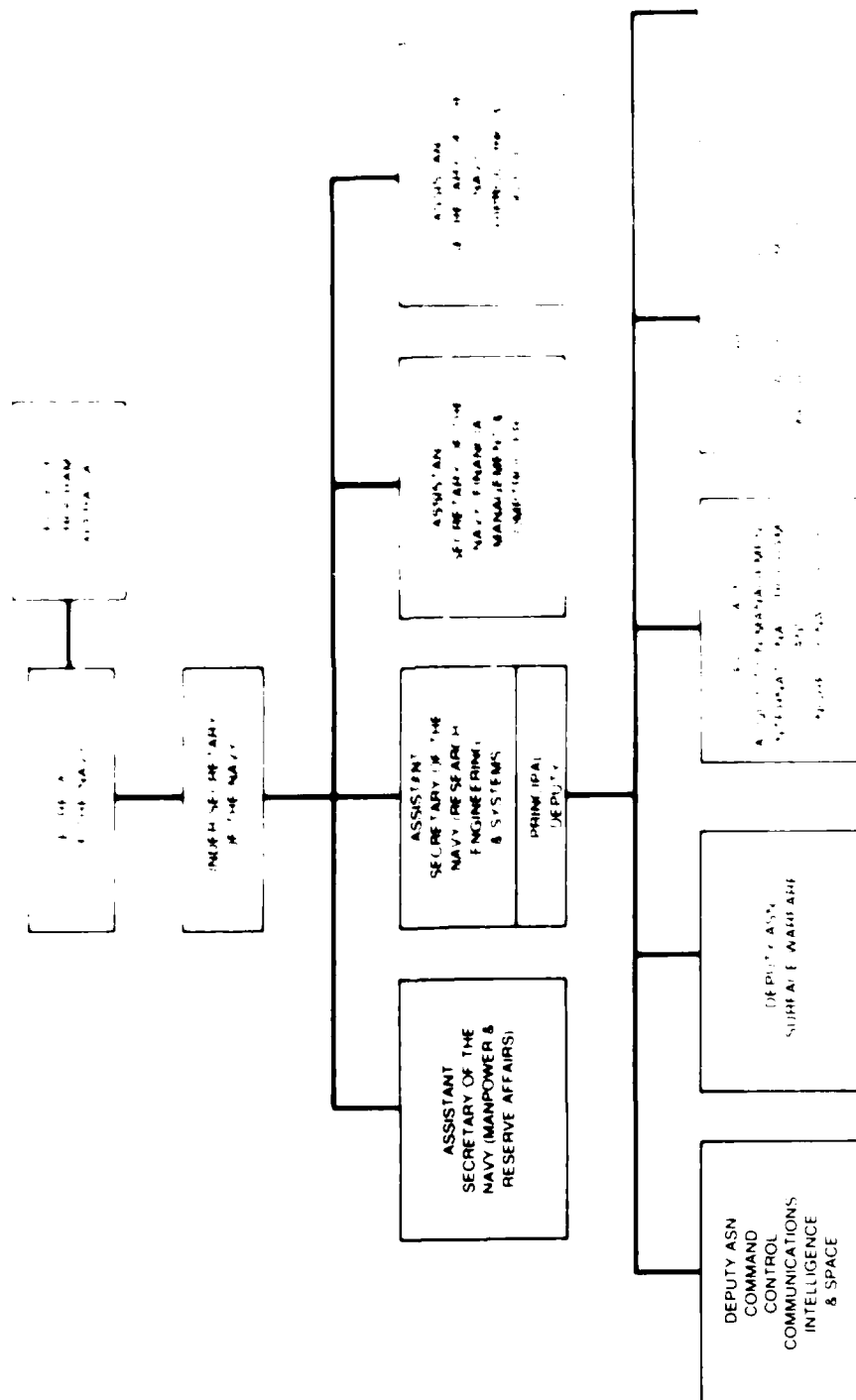


Figure E-2. Office of the Secretary of the Navy

and Directors for Strategic Programs, for ASW SUB Programs, and for Marine Corps Programs.

The principal advisors to the ASN(R,E&S) are the Director RD&A (OP-098), DCS(RD&S) Marine Corps, and the CNR. The ASN(R,E&S) is advised and assisted by the Commander, Space and Naval Warfare Systems Command, with regard to Navy laboratories and R&D centers and by the Oceanographer of the Navy in his area of expertise.

E2.2 Office of Program Appraisal (OPA). The Office of Program Appraisal provides the Secretary of the Navy with a small appraisal staff to assist in assuring that existing and proposed Navy and Marine Corps programs provide the optimum means of achieving Department of the Navy objectives. The office conducts or coordinates studies, evaluates the responsiveness of the programming system to the needs of the Secretary, and provides recommendations as required.

SECNAVINST 5430.60

E3 OFFICE OF THE CHIEF OF NAVAL OPERATIONS (OPNAV)

The Chief of Naval Operations is the senior military officer of the Department of the Navy and takes precedence above all other officers of the naval service, except an officer of the naval service who is serving as Chairman of the Joint Chiefs of Staff. The Chief of Naval Operations is the principal naval advisor to the President and to the Secretary of the Navy on the conduct of war, and the principal naval advisor and naval executive to the Secretary on the conduct of activities of the Department of the Navy. The Chief of Naval Operations is the Navy member of the Joint Chiefs of Staff (Fig. E-3.).

The Chief of Naval Operations commands the Operating Forces of the Navy, BUPERS, and shore activities assigned by the Secretary of the Navy including the System Commanders and other naval material activities. The Chief of Naval Operations is responsible to the Secretary of the Navy for the utilization of resources by

and the operating efficiency of all commands and activities under his command.

In carrying out these responsibilities, the CNO is responsible for:

- Organizing, training, equipping, preparing, and maintaining the readiness of Navy forces;
- Determining and directing the efforts necessary to fulfill current and future requirements of the Navy (less Fleet Marine Forces and other assigned MARCORPS forces) for manpower, material, weapons, facilities, and services, including the determination of quantities, military performance requirements, and times, places, and priorities of need;
- Determining the needs of naval forces and activities for RDT&E; planning and providing for the conduct of development and T&E which is adequate and responsive to long-range objectives, immediate requirements, and fiscal limitations; and to provide assistance to the ASN(R,E&S) in the direction, review, and appraisal of the overall Navy RDT&E Program ensuring fulfillment of stated requirements

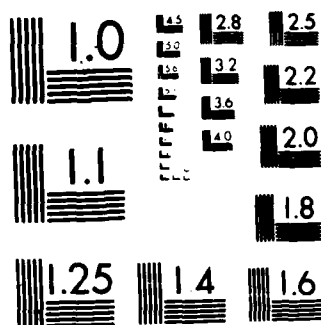
OPNAVINST 5430.48, OPNAV Organization Manual

E3.1 Deputy Chief of Naval Operations (Manpower, Personnel, and Training) (DCNO (MPT)) (OP-01). The mission of the DCNO(MPT) is to implement the responsibilities of the CNO for the management of personnel, programming of MPT resources, including military personnel, and appraisal of total force manpower personnel. The DCNO(MPT) programs to develop and implement determination of total force allocation of manpower resources. The principal advisor to the CNO on centralized coordination of manpower standards, policies, and management.

24

NL

A 10x10 grid of squares. The grid is composed of 10 rows and 10 columns. The squares are mostly black, with a small white square at the bottom right corner (row 10, column 10).



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

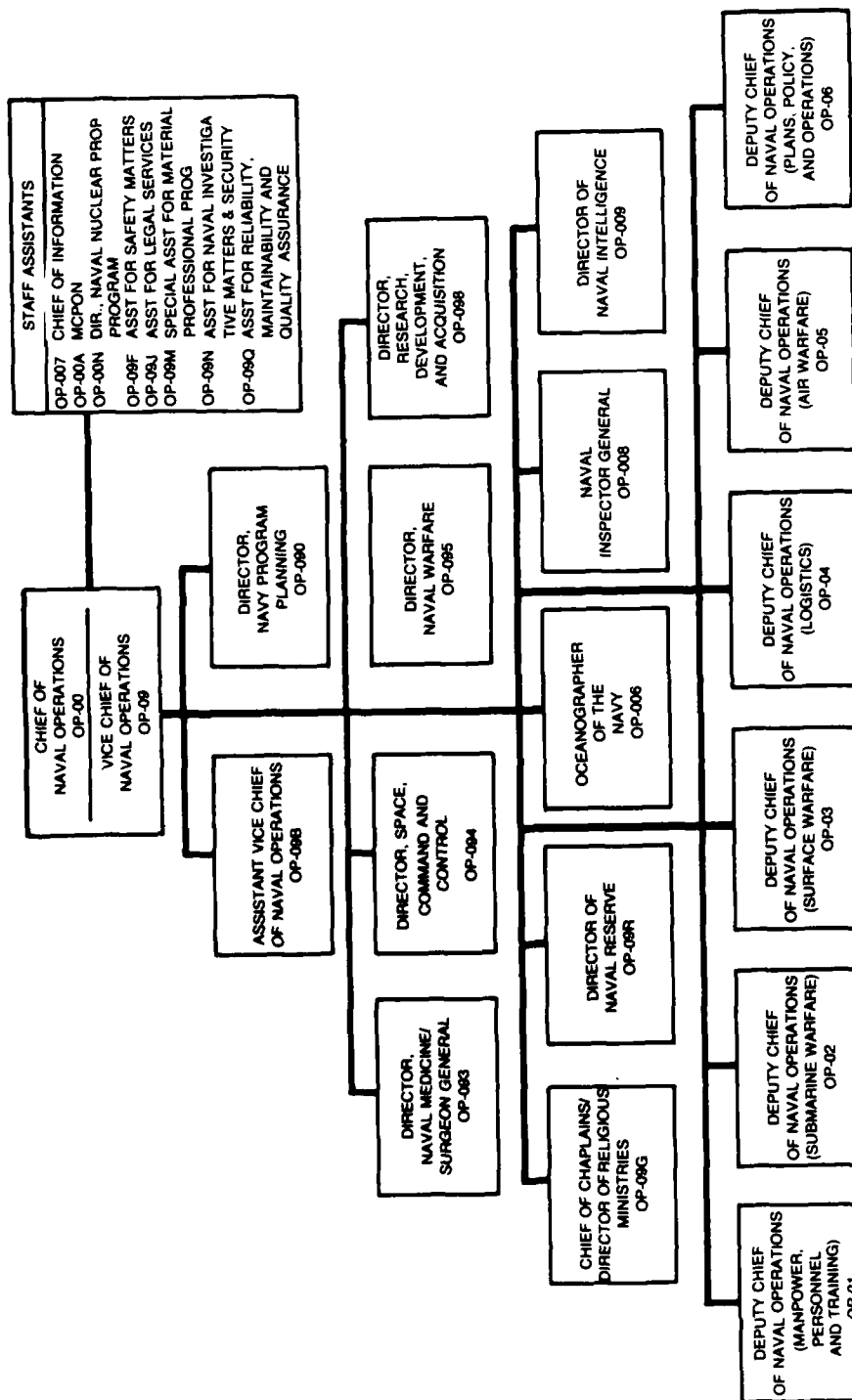


Figure E-3. Office of the Chief of Naval Operations (OPNAV)

In carrying out the above responsibilities the DCNO(MPT) exercises joint responsibility with other sponsors for ensuring validity and feasibility of requirements for new equipment and weapon systems. In addition, the DCNO(MPT) determines RDT&E objectives and requirements and monitors efforts in support of total force MPT management. (Note: the term "total force" as used here encompasses active duty and reserve military, civilians, and contractors.)

E3.2 Deputy Chief of Naval Operations (Submarine Warfare) (OP-02). The DCNO (Submarine Warfare) implements the responsibilities of the Chief of Naval Operations with respect to the determination of shipboard and related support requirements, and major characteristics of programs pertaining to submarines and deep submergence systems, and in such planning, preparation, and execution as are incident thereto; acts as the DCNO's principal advisor on submarine and deep submergence systems matters; fulfills responsibilities in respect to readiness, training, and preparation for war; exercises centralized direction of all strategic submarine force planning, programming, and appraising in order to ensure integrated and effective Navy strategic submarine concepts and force levels; acts as representative in these matters involving relationships with other governmental agencies; and, in coordination with the Director of Naval Warfare (OP-095), develops overall submarine force levels and requirements.

E3.3 Deputy Chief of Naval Operations (Surface Warfare) (OP-03). The DCNO (Surface Warfare) implements the responsibilities of the Chief of Naval Operations with respect to the determination of shipboard requirements and major characteristics of surface ships (less carriers and submarine support ships) and surface warfare programs, including those in the Naval Reserve; fulfills responsibilities with respect to operational readiness, training and preparation for war of surface ships (less carriers and submarine support ships); acts as principal advisor on surface warfare matters involving relationships with other governmental agencies; exercises for the CNO centralized formulation, coordination, supervision and execution of the Navy shipbuilding and conversion programs for all surface ships (less carriers and submarine support ships); directs programming and budgeting for all ship programs, includ-

ing those of the Naval Reserve Force, and ensures that the programs are fully supported by timely planning and appraisal; formulates the characteristics of all naval surface ships (less carriers and submarine support ships) in order to fulfill and anticipate the requirements of naval operations; acts as Chairman of the Ship Characteristics and Improvement Board (SCIB); manages specific programs which the CNO may direct; and, in coordination with the Director of Naval Warfare (OP-095), develops overall force levels and requirements related to surface warfare (less carriers and submarines).

E3.4 Deputy Chief of Naval Operations (Logistics) (OP-04). The mission of the DCNO (Logistics) is to plan, determine, and provide for the logistic support needs of the Operating Forces of the Navy, except for those areas elsewhere assigned; and to serve as the principal advisor and executive to the Chief of Naval Operations on the conduct of the logistics affairs of the Department of the Navy.

E3.5 Deputy Chief of Naval Operations (Air Warfare) (OP-05). The DCNO (Air Warfare) implements the responsibilities of the Chief of Naval Operations with respect to naval aviation programs, including the Naval Air Reserves; determines the shipboard and related support requirements for aircraft carriers and specified aviation type ships; acts as the principal advisor on naval aviation matters, including air warfare, and as the representative in naval air operational matters involving relationships with other government and civil agencies; and, in coordination with the Director, Naval Warfare, develops overall naval aviation force levels and requirements.

E3.6 Deputy Chief of Naval Operations (Plans, Policy, and Operations) (OP-06). The DCNO (Plans, Policy, and Operations) develops and disseminates plans and policies and serves as the principal advisor to the Chief of Naval Operations on Joint Chiefs of Staff matters and as the principal advisor to the Secretary of the Navy and the Chief of Naval Operations on strategic planning, nuclear systems, National Security Council affairs, international politico-military matters, technology transfer, foreign military assistance, and naval operational information.

DCNO (Plans, Policy, and Operations) plays a major role in the development of the structure of long-range Navy capability objectives which is the function of RDT&E to make attainable through development of required technological capabilities.

E3.7 Director, Navy Program Planning (OP-090). The Director, Navy Program Planning exercises centralized supervision and coordination of the Navy Program Planning and study effort, in order to ensure the integration of planning, programming, budgeting, and appraisal within the Office of the Chief of Naval Operations and the management echelons subordinate to the Chief of Naval Operations.

As the CNO's principal staff executive for other than JCS matters, the Director, Navy Program Planning is responsible for reviewing and evaluating programs in relation to the total Navy program and for recommending to the CNO or VCNO changes where needed. In addition, OP-090 directs the budget process, including supervision of related financial management matters. Thus, the Director, Navy Program Planning exercises a broad and profound influence on all Navy programs, including RDT&E programs.

E3.7.1 General Planning and Programming Division (OP-90). Under the direction of the Director, Navy Program Planning, OP-90 develops and operates the integrated program planning system for the Chief of Naval Operations and implements the responsibilities of the Director, Navy Program Planning with regard to Navy programs and related plans.

E3.7.2 Program Resources Appraisal Division (OP-91). The mission of OP-91 is to evaluate the relative effectiveness of alternatives in programs and proposals and thereby assist in the decision-making process; to assess all major weapons and weapon systems at each milestone during the acquisition process; to manage the CNO Study and Analysis Program (CSTAP), to coordinate it with other Navy Department study efforts and to review and evaluate study results; to implement OP-090 responsibilities for conducting scientific, analytical and technical studies through the medium of CNA; to review and validate analytical models and methodologies used in program planning; and to support CNO with respect to the extended planning objectives of the

Navy, including those pertaining to the future of seapower and other maritime-related matters involving the security and well-being of the United States.

E3.8 Director, Naval Medicine (OP-093). The Director Naval Medicine provides, within OPNAV, centralized and coordinated guidance, direction, and oversight on all health related programs. These duties include advising and assisting the CNO in exercising command responsibility over NAVMEDCOM (see E8) and serving as Program Sponsor (see I.7.3) for the DON Medical R&D Program.

E3.9 Director, Space, Command and Control (OP-094). The mission of OP-094 is to exercise centralized coordination over policy, planning, and integrating of requirements for Navy C², including C² and communications; space exploitation (except those requirements under the aegis of the Director, CIA), and space defense matters; reconnaissance; ocean surveillance (less Submarine Ocean Systems Underwater Surveillance (SOSUS)); C³ and COMSEC. To implement the responsibilities of the CNO with respect to determination of characteristics, development, appraisal, and coordination of program execution for C² systems (including satellite communications, surveillance, navigation, and environmental sensing systems); to act as principal advisor to the CNO on C² matters; to ensure optimum use of Navy information systems. To act as the CNO's representative to other services and government agencies for matters involving COMSEC, communications, information systems, space matters, Worldwide Military Command and Control System (WWMCCS), and Navy Electromagnetic Interference (EMI).

E3.10 Director, Naval Warfare (OP-095). The Director, Naval Warfare exercises centralized coordination of planning and requirements for fleet readiness, modernization, and force levels associated with the conduct of tactical warfare by general purpose naval forces. Included are responsibilities for assessment, integration, and coordination of tactical warfare programs at the battle and amphibious force level for general tactical development and training and for special management of selected programs.

E3.10.1 Oceanographer of the Navy (OP-006). The mission of the Oceanographer of

the Navy is to plan, coordinate, and implement the responsibilities of the CNO with regard to naval oceanography (including oceanography, meteorology, mapping, charting, geodesy, astrometry, and precise time and time interval); to assist the ASN(R,E&S) with respect to oceanography and related plans, programs, and policy matters, and to serve as the spokesman for naval oceanographic matters. OP-006 acts as resource sponsor for the Naval Oceanography Command and Naval Observatory and as program sponsor for Naval Oceanography programs. As Oceanographer of the Navy, OP-006 acts for SECNAV and CNO in interagency and international matters involving Naval Oceanography.

E3.11 Director, Research, Development, and Acquisition (RD&A) (OP-098). The Director RD&A implements the responsibilities of the Chief of Naval Operations and assists the Assistant Secretary of the Navy (Research, Engineering, and Systems) with respect to coordination, integration, and direction of the Navy Research, Development, Test, and Evaluation (RDT&E) Program.

As of the 31 December 1986 information cut-off for this 10th edition, it was anticipated that, in response to the Defense Reorganization Act of 1986, the staffs of OP-098, DC/S(R,D&S) Marine Corps (E6.1.1), and ASN(R,E&S) (E2.1) would be integrated. (See A4 Appendix A and the last page of ASN(R,E&S)'s Foreword.)

In carrying out these responsibilities, the Director RD&A acts for the Chief of Naval Operations as sponsor of the appropriation RDT&E,N; manages the planning and reporting procedures for the conduct of the RDT&E program; coordinates the formulation of and promulgates RDT&E requirements resulting from the concerted efforts of OPNAV, ensuring that technology is harnessed to the functional/mission tasks of the DCNO/DMSOs; coordinates exchange of RDT&E information; supervises the formulation of the Navy Program Objectives and annual budget for RDT&E; and appraises the progress of RDT&E effort, recommending projects for curtailment, suspension, cancellation, substitution, or advancement, as appropriate. The Director RD&A serves as principal advisor to the ASN(R,E&S), exercising specific responsibilities for financial management and control of RDT&E,N operating budget allocations, including

certain "below threshold" program change authority; develops plans and policies for international cooperative R&D and advises on implications of foreign R&D efforts; advises the CNO, in consonance with other DCNOs and DMSOs, on all RDT&E matters relating to nuclear energy and Navy space programs; and coordinates and acts as central manager for nonweapon nuclear programs. The Director RD&A provides policy guidance to and exercises technical direction of COMOP-TEVFOR in matters relating to Navy RDT&E programs; acts as OPNAV focal point for TEMPs, NDCPs, and DCPs; maintains cognizance of naval personnel requirements and monitors the functions and performance of naval personnel attached to USDRE and DARPA; and sponsors for the CNO all range and target matters.

The organization of the Office of Director RD&A is depicted in Figure E-4. Responsibilities of various officials and offices within the organization are detailed below.

E3.11.1 Special Assistant for Intelligence (OP-098D). The Special Assistant for Intelligence acts as the principal advisor, coordinator, and control and liaison point for the Director RDT&E on matters pertaining to intelligence. This is an additional duty billet for the Director, Technology Assessment Division.

E3.11.2 Assistant for Medical and Allied Sciences (OP-098E). OP-098E advises and assists in the implementation of responsibilities of the Director RD&A and the Assistant Secretary of the Navy (R,E&S) (as required) in respect to the application of medical and allied sciences to the planning, programming, and appraising of Research, Development, Test, and Evaluation (RDT&E). OP-098E acts as Development Coordinator for advanced medical RDT&E programs.

E3.11.3 Assistant for International Research and Development (OP-098F). OP-098F develops plans and policies for international cooperative R&D of military equipment for naval use.

E3.11.4 Assistant for Research, Development, and Acquisition Management (OP-098R). OP-098R serves as the Special Assistant for acquisition management to the Director, RD&A.

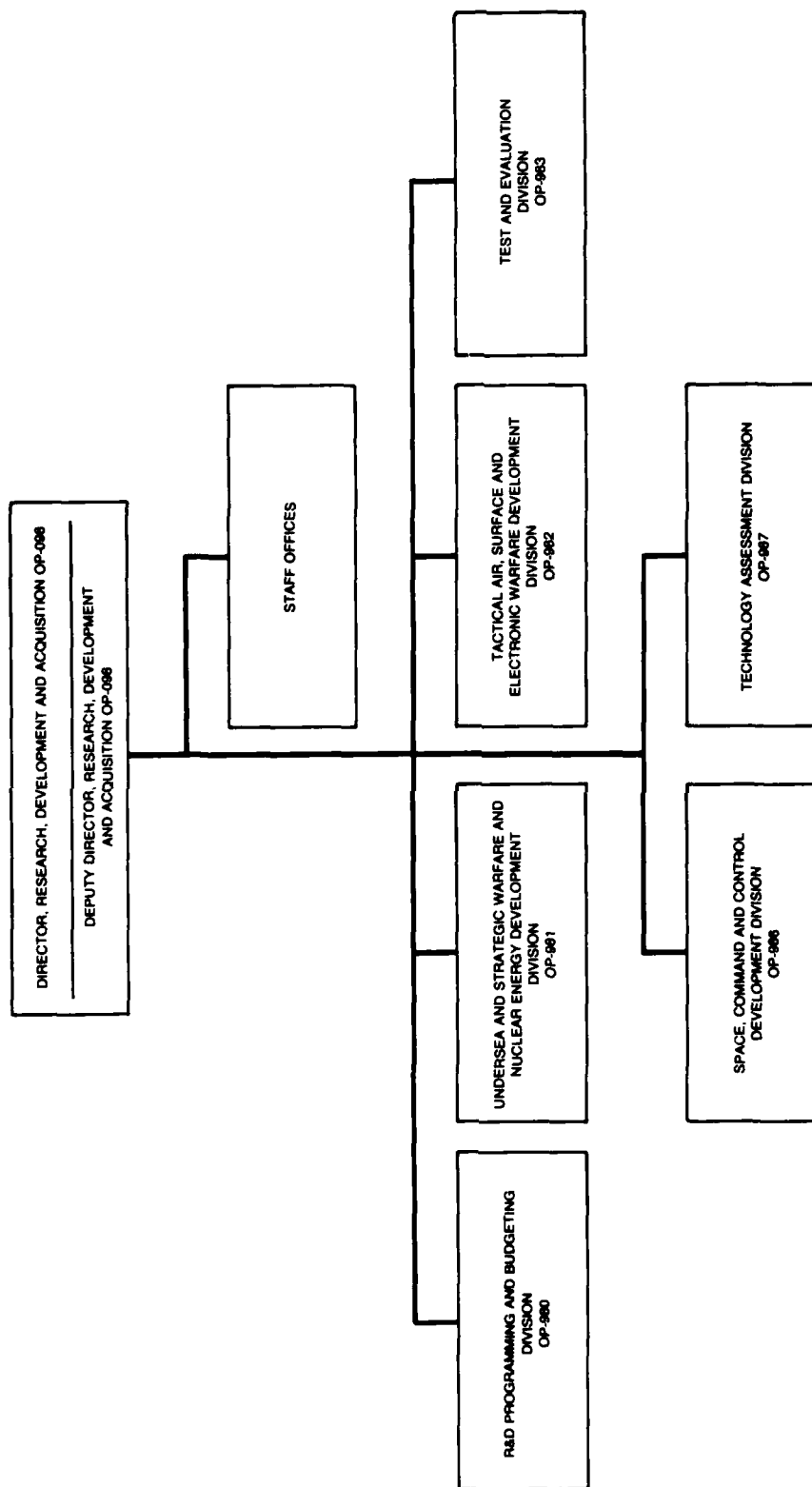


Figure E-4. Office of the Director, Research, Development, and Acquisition (OP-098)

Responsibilities of the billet include support of the Director and of the OP-098 divisions in their responsibilities for management of the acquisition of Navy systems; monitoring of DOD acquisition procedures; revision and promulgation of acquisition management directives; and representation of the Director in matters relating to acquisition management. OP-098R maintains the Acquisition Category (ACAT) data base.

E3.11.5 Navy Member, DOD Air Munitions Requirements and Developments (AMRAD) Committee (OP-098W). OP-098W assists the Under Secretary of Defense, Research and Engineering (USDRE), the Joint Chiefs of Staff (JCS), the Military Departments and other DOD Components in assuring, where practical, joint use of qualitative requirements and design standardization of air and other munitions to fulfill the needs of more than one Service.

E3.11.6 R&D Programming and Budgeting Division (OP-980). OP-980 implements the programming and budgeting, Congressional relationships, and budget execution responsibilities of the Director RD&A with respect to Research, Development, Test, and Evaluation programs.

E3.11.7 Undersea and Strategic Warfare Development Division (OP-981). OP-981 implements the responsibilities of the Director RD&A for the coordination, integration, and direction of the Navy Research, Development, Test, and Evaluation programs in the field of undersea warfare, including undersea surveillance; strategic warfare, including offensive and defensive systems; nuclear energy and weapons; and the coordination, integration, and direction of all nonweapon nuclear matters. OP-981 is the OPNAV point of contact for Navy involvement in the Strategic Defense Initiative (SDI) Program.

E3.11.8 Tactical Air, Surface, and Electronic Warfare Development Division (OP-982). OP-982 implements the responsibilities of the Director RD&A for the coordination, integration, and direction of those Research, Development, Test, and Evaluation (RDT&E) programs concerned with air, surface, and electronic warfare development matters.

E3.11.9 Test and Evaluation Division (OP-983). OP-983 assists the Director RD&A with respect to planning, conduct, and reporting of all air, surface, and undersea/strategic test and evaluation (see G2.3.1 for detailed functions).

E3.11.10 Space, Command and Control Division (OP-986). OP-986 implements the responsibilities of the Director RD&A for the coordination, documentation, integration, testing, and acquisition of programs in the fields of space, command, control, communications, oceanography, meteorology, and cryptography.

E3.11.11 Technology Assessment Division (OP-987). OP-987 performs technology assessment in support of the Navy RDT&E Program; provides a continuing overview of technological developments and their implications for operational needs; serves as the principal technology interface between OPNAV and ASN (R,E&S); and provides scientific and technological assistance required by the Director, RD&A.

E3.12 Activities Reporting to CNO.

E3.12.1 Naval Systems Commands. (See E4.)

E3.12.2 Major Program Offices. (See E5.)

E3.12.3 Naval Medical Command. (See E8.)

E3.12.4 Naval Oceanography Command. Located at Bay St. Louis, Mississippi, the Naval Oceanography Command is responsible for the management of assigned oceanography; mapping, charting, and geodetic; and meteorological activities and efforts under the Naval Oceanographic Program and provides technical guidance in such matters throughout the Department of the Navy.

OPNAVINST 5450.165

E4 NAVAL SYSTEMS COMMANDS

E4.1 Material Support Responsibilities of Systems Commanders. Each Systems Command

E4.2

provides for and meets those material support needs of the Department of the Navy that are within the assigned "material support" responsibility of such command. This general responsibility includes specific responsibility for the research, design, development, logistics planning, test, technical evaluation, acquisition, procurement, contracting, production, construction, manufacture, inspection, fitting out, supply, maintenance, alteration, conversion, repair, overhaul, modification, and advance base outfitting of naval material for which the command is assigned responsibility. In addition, individual Systems Commands are tasked to perform control, coordination, or service functions as designated Lead Systems Commands for particular programs or functions.

Representative material support responsibilities are listed in the following sections.

E4.2 Naval Air Systems Command. (See Fig. E-5.)

- Navy and Marine Corps aircraft systems and components (including fuels and lubricants)
- Air-launched weapon systems and components (excluding torpedoes and mines)
- Other airborne and air-launched systems and components such as electronics, underwater sound, catapults, aircraft/missile range and evaluation instrumentation, mine countermeasures, targets, pyrotechnics, photographic and meteorological equipment, and training and GFE for the foregoing.

E4.3 Naval Facilities Engineering Command.

- Shore facilities and fixed surface and sub-surface ocean structures
- Floating cranes, amphibious pontoon equipment, fleet moorings, and lift docks
- Materials and equipment for advanced base functional components

- Tools, equipment, and techniques for construction and maintenance of fixed surface and sub-surface ocean structures
- Materials and appliances for defense ashore against chemical, biological, and radiological warfare.

E4.4 Naval Sea Systems Command. (See Fig. E-6.)

- Ships, submersibles, and other sea platforms
- Shipboard combat systems, including sensors, tactical data systems, surveillance and fire control radars, sonars, computers, guns, launchers, ammunition, guided missiles, mines, and torpedoes
- Shipborne components, including nuclear and non-nuclear propulsion, auxiliary power generating and distribution systems, interior communications, navigation equipment, deck machinery, weapons and cargo handling, stowage and damage control systems
- Diving and salvaging equipment
- Explosive ordnance disposal and explosive safety
- Ship systems integration.

E4.5 Naval Supply Systems Command.

- Serves as lead SYSCOM for logistics research and development
- Materials-handling equipment not otherwise assigned
- Provides technical direction for bulk fuel programs within the Navy, including facilities management, technical operations, and quality surveillance
- Special clothing not otherwise assigned
- Warehousing operations

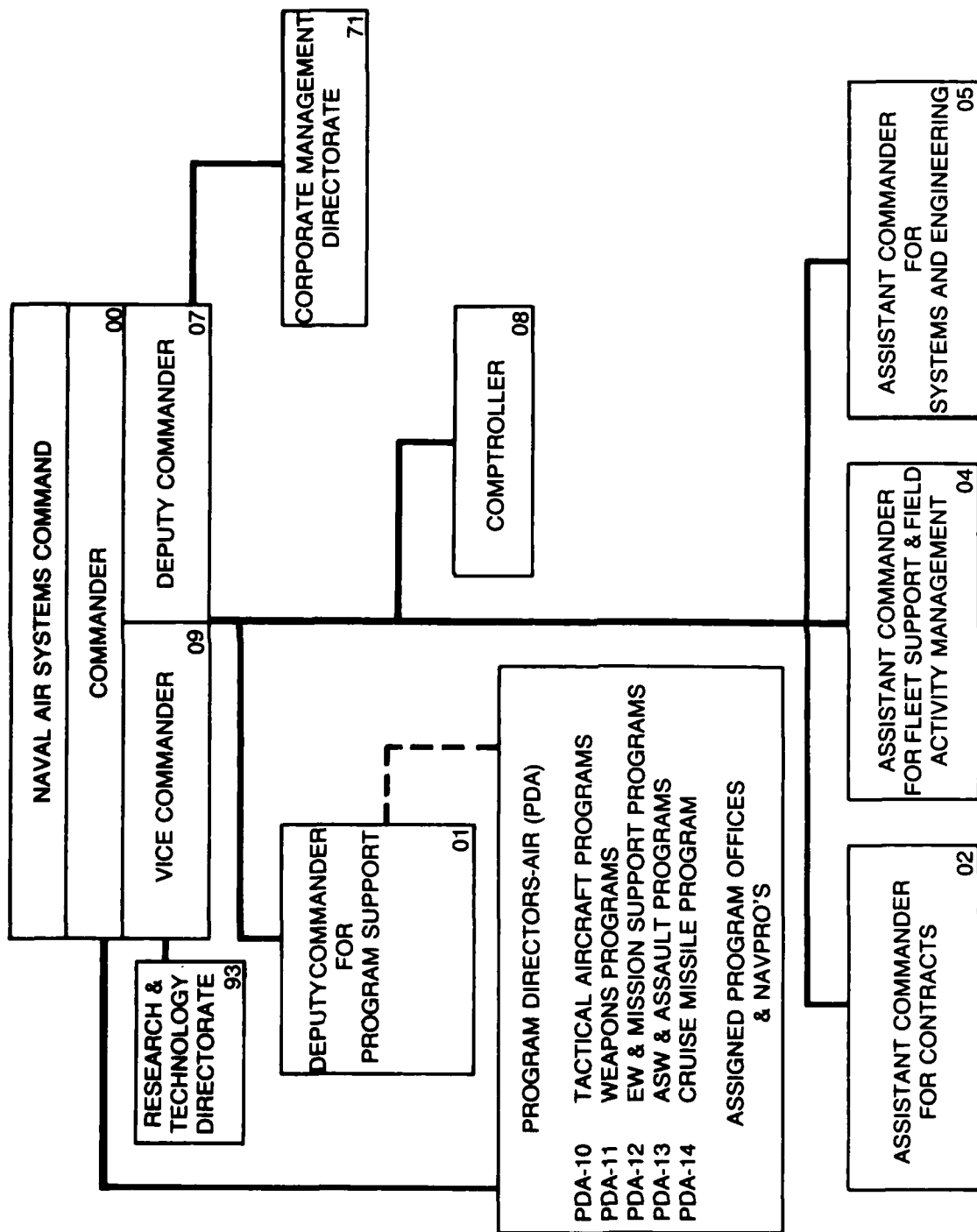


Figure E-5. Naval Air Systems Command Headquarters

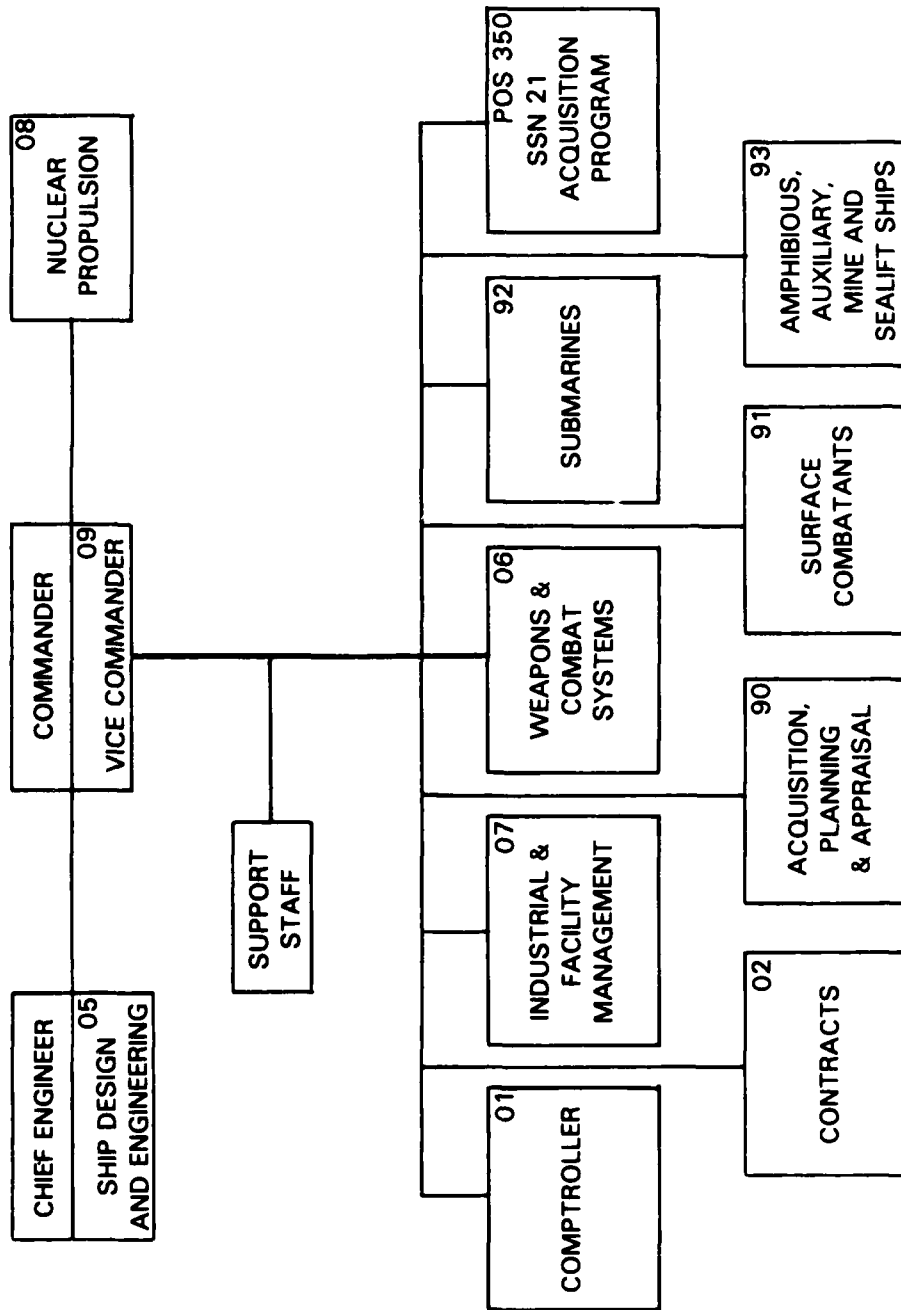


Figure E-6. Naval Sea Systems Command Headquarters

- Naval material for which responsibility is not otherwise assigned.

E4.6 Space and Naval Warfare Systems Command. (See Fig. E-7.)

- Command/control/communications (C³) (platform to platform)
- Underseas and space surveillance (includes shore communications)
- Navigation aids, air traffic control, and automatic landing systems, less airborne
- Marine Corps expeditionary and amphibious electronics
- Electronic warfare including ESM (Electronic Warfare Support Measures), ECM systems, and ECCM (less airborne)
- Multiplatform electronic systems not otherwise assigned
- Intelligence and intelligence-collection systems
- Space systems
- Cryptographic and cryptologic equipment.

In addition, SPAWAR has DON-wide responsibility for force warfighting architecture and requirements integration among total naval battle force; to provide similar material support for the Marine Corps; and to provide management of DON R&D Centers.

E5 MAJOR PROGRAM OFFICES

The following are the missions of representative program offices charged with management of ACAT I programs. Some program offices are responsible for managing several different programs.

E5.1 Strategic Systems Program Office (SPPO). **Mission:** To provide material support (acquisition and fleet support) for fleet ballistic missile and strategic weapons systems, including missiles, platforms, associated equipment, secu-

rity, training of personnel, and installation and direction of necessary supporting facilities; and to perform such other functions and tasks as assigned by higher authority.

OPNAVINST 5450.217

E5.2 Saudi Naval Support Program Office.

Mission: To direct, manage, and integrate all efforts within the U.S. Navy in assisting the Saudi Arabia Government and Royal Saudi Naval Force in acquiring, maintaining, and operating an integral and self-contained naval establishment; and to perform such other functions and tasks as may be directed by higher authority.

OPNAVINST 5450.213

E5.3 Navy Joint Tactical Information Distribution System (JTIDS) Program.

Mission: To exercise centralized development, integration, and coordination necessary to acquire for the operating forces of the Navy fully supported, compatible, and interoperable JTIDS systems and equipment which will satisfy approved requirements.

NAVAIRINST 5400.113/NAVELEXINST 5430.28

E5.4 High Frequency Anti-Jam Program (HFAJ).

Mission: To develop and acquire conventional and Anti-Jam (AJ) High Frequency (HF) communications systems to meet tactical and strategic support connectivity needs of ship, shore, and air platforms.

NAVELEXINST 5430.29

E5.5 Advanced Tactical Aircraft Protection Systems (ATAP).

Mission: To provide the operating forces of the Navy and Air Force fully developed, common, supportable and reliable systems which will satisfy approved operational requirements and to manage the acquisition and support of Foreign Military Sales (FMS) or other Defense Security assistance programs.

NAVAIRINST 5400.103

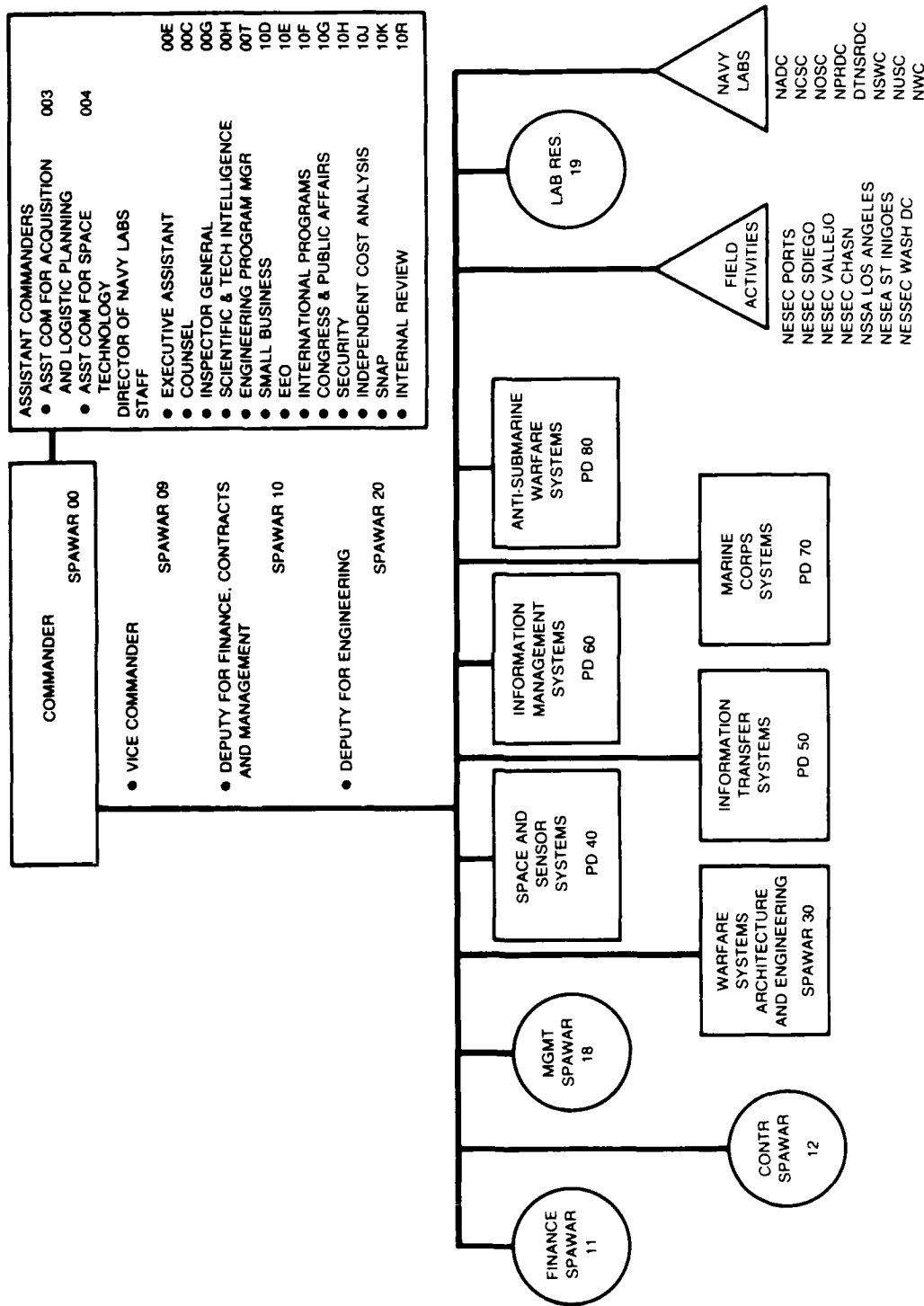


Figure E-7. Space and Naval Warfare Systems Command Headquarters

E5.6 Undergraduate Jet Flight Training System. **Mission:** To provide the Naval Air Training Command a fully developed, supportable, and reliable Undergraduate Jet Flight Training System which will meet the requirements to provide fixed wing jet flight training for student naval aviators and transition students of the Navy, Marine Corps, and selected foreign nationals.

NAVAIRINST 5400.95

E5.7 Joint Services Advanced Vertical Lift Aircraft. **Mission:** To provide DOD operating forces with a fully developed, supportable, and reliable advanced vertical lift aircraft system capable of satisfying operational requirements, including but not limited to, the following: Marine Corps assault vertical lift; Navy combat search and rescue; and Air Force special operations. In addition, the PM will manage the acquisition and support of similar systems for foreign governments when required in support of Defense Security Assistance Programs.

NAVAIRINST 5400.104

E6 MARINE CORPS ORGANIZATION FOR RDT&E

The Marine Corps is responsible for the development of equipment intended for use by landing forces in amphibious operations. The two Marine Corps organizations primarily concerned with RDT&E matters are the Headquarters Marine Corps (HQMC) and the Marine Corps Development and Education Command (MCDEC) at Quantico, Virginia. In addition, individual personnel considered to comprise elements of the Marine Corps RDT&E organization are those assigned to other DOD R&D activities as Marine Corps Liaison Officers or Marine Corps Representatives, and those occupying Marine Corps-sponsored billets in the T/Os of these activities.

MCO P5000.10, HQMC Order P5400.18

E6.1 HQMC Organization for RDT&E.

E6.1.1 Deputy Chief of Staff for Research, Development, and Studies (DC/S RD&S). The Deputy Chief of Staff for Research, Development, and Studies directs the total Marine Corps RDT&E effort to support the acquisition of new systems. The DC/S RD&S is assisted by the general staff sections throughout the execution and coordination of the systems acquisition process within their areas of staff responsibility. In addition, the DC/S RD&S directs and coordinates an extensive studies program conducted by civilian contractors, in-house offices, and the other Services, to support the Marine Corps RDT&E efforts.

As of the 31 December 1986 information cut-off for this 10th edition, it was anticipated that, in response to the Defense Reorganization Act of 1986, the staffs of DC/S(R,D&S), OP-098 (E3.1.1), and ASN(R,E&S) (E2.1) would be integrated. (See A4 Appendix A and the last page of ASN(R,E&S)'s Foreword.)

The DC/S RD&S functions as a special advisor to the ASN(R,E&S) for Marine Corps RDT&E matters. The DC/S RD&S is a principal of the Marine Corps Program Decision Meeting (MCPDM) and serves as the Executive Secretary of ACAT I and II MCPDMs. Also he is the chairman of ACAT III MCPDMs and the Decision Authority for ACAT IV MCPDMs. Within the Marine Corps the DC/S RD&S has overall responsibility for the review, coordination, and monitoring of all RDT&E activity, including planning, programming, and budgeting. Assistance in performing these functions, including technical management and execution of R&D programs, is provided by CG, MCDEC. The DC/S(RD&S) is the Principle Executive Officer (PEO) for the Acquisition Execution up to Milestone III.

E6.1.1.1 Chief Scientist of the Marine Corps. The Chief Scientist serves as the principal consultant and advisor for scientific and technological matters to the CMC, ACMA, DC/S RD&S, and to other Deputy Chiefs of Staff and Headquarters offices. His primary purpose is to provide scientific/technological judgment, guidance, background, and recommendations to

E6.1.1.2

ensure continuing and significant improvement in the effectiveness of Marine Corps systems and the attainment of a modern landing force capability as it is affected by research, development, and studies. The Chief Scientist provides policy and analytical guidance for the R&D and studies programs.

E6.1.1.2 Program and Budget Branch.

The Program and Budget Branch assists the DC/S RD&S in the coordination and supervision of planning, programming, and budgeting activities required in execution of the Marine Corps RDT&E program, except for those planning and programming activities assigned to the Studies Branch of the Office of the DC/S RD&S for coordination and supervision.

E6.1.1.3 Developments Branch.

The Development Branch assists and advises the DC/S RD&S in the formulation, coordination, and execution of RDT&E projects. Within the Developments Branch, Development Coordinators advise and assist the DC/S(RD&S) concerning specific RDT&E programs.

E6.1.1.4 Studies Branch.

The Studies Branch coordinates all major Marine Corps studies while monitoring the studies of the other U.S. government agencies, U.S. military services, and services of friendly nations.

E6.1.2 Deputy Chief of Staff for Aviation (DC/S Avn). The DC/S Avn is the program sponsor for all matters relating to aviation, including systems acquisition in assigned areas of cognizance. The DC/S Avn is a principal member of the MCPDM. The DC/S Avn holds the position of Assistant Deputy Chief of Naval Operations (Marine Aviation), which enables him to function as an OPNAV sponsor for Navy programs involving Marine aviation.

E6.1.3 Deputy Chief of Staff for Manpower (DC/S Mpr). The DC/S Mpr is responsible for military (Marine and Navy) and civilian manpower required to support the Marine Corps, and for systems acquisitions in assigned areas of cognizance. The DC/S Mpr directs and supervises all aspects of manpower matters, including personnel research, manpower analysis, and the

development of information systems. He is a MCPDM principal.

E6.1.4 Director of Intelligence (DirIntel).

The DirIntel Division is the program sponsor for all intelligence matters including systems acquisitions in assigned areas of cognizance. The DirIntel coordinates principally with the DC/S Plans, Policies, and Operations, the DC/S Avn, and the DirC⁴ on matters/programs affecting or impacting in areas of air/ground/C². He is a MCPDM principal.

E6.1.5 Deputy Chief of Staff for Plans, Policies, and Operations (DC/S PPO). The DC/S PPO serves as a principal member of the MCPDM, exercises primary cognizance in the achievement and improvement of operational capabilities of ground combat systems, and acts as an acquisition sponsor for selected systems and equipment.

E6.1.6 Deputy Chief of Staff for Installations and Logistics (DC/S I&L). The DC/S I&L is program sponsor for all matters pertaining to installations and logistics support and for systems acquisition in assigned areas of cognizance. The DC/S I&L serves as a principal member of the MCPDM and is the principal source of assistance and support for acquisition program sponsors in the Integrated Logistic Support aspects of ground systems acquisition, including aviation ground support equipment. For all other aviation systems acquisitions, the DC/S I&L coordinates with the DC/S Avn on installations and logistics support matters. The DC/S I&L is the PEO for acquisition programs on and after Milestone III.

E6.1.7 Deputy Chief of Staff for Requirements and Programs (DC/S R&P). The DC/S R&P is responsible for coordinating Headquarters Marine Corps actions within the framework of the PPBS to provide the overall program requirements of the Fleet Marine Force, the Supporting Establishment, and the Organized Marine Corps Reserve. The DC/S R&P is a principal member of the MCPDM and validates all requirements for capabilities in meeting Marine Corps objectives. The DC/S R&P ensures consistency, continuity, and compatibility of all approved requirements within available resources, and ensures HQMC

staff application of appropriate analytical disciplines in requirements validation, program development, and program review.

E6.1.8 Director, Command, Control, Communications, and Computers (C⁴) Division (DirC⁴). The Director, C⁴ Division provides for the planning, directing, and coordinating of staff activities on matters relating to command and control systems; is the program sponsor for Marine Corps telecommunications and automated data systems; advises the CMC on JCS matters related to those activities; and is a principal member of the MCPDM.

E6.2 Marine Corps Development and Educational Command (MCDEC).

E6.2.1 Commanding General, MCDEC (CG,MCDEC). CG,MCDEC has been designated the field representative of the Commandant for development, in coordination with the other Services, of those phases of amphibious operations that pertain to the doctrines, tactics, techniques, and equipment used by landing forces.

Representative functions performed by CG,MCDEC include: identifying required study areas and recommending and executing approved studies, as appropriate, in support of Marine Corps mid- and long-range planning; preparing, coordinating, and reviewing operational requirement documentation; monitoring the status and capabilities of equipment and system developments conducted by other Services and making recommendations concerning Marine Corps interest and participation therein; as a DON claimant on behalf of the Marine Corps, prepare and recommend annually a Marine Corps Exploratory Development Program to be executed by the CNO; implement developmental efforts supported by Marine Corps RDT&E funds; implement policies, procedures, and requirements for development, testing, and evaluation (DT&E) of all systems to be acquired by the Marine Corps; provide direct assistance to the Marine Corps Operational Testing and Evaluation Activity (MCOTEA) and the Fleet Marine Force (FMF) in the planning, conduct, and reporting of operational test and evaluation (OT&E); and prepare and recommend annually a total program for Marine Corps RDT&E during

the FYDP period, including recommended funding (see G4.1).

E6.2.2 Development Center, MCDEC. CG, MCDEC's Deputy for Development/Director, Development Center has been assigned the responsibility for carrying out CG,MCDEC's RDT&E functions as listed above. The Development Center provides capabilities for R&D planning, management, test and evaluation, and for developing new concepts, doctrines, tactics, techniques, and organizational structures.

E6.3 Marine Corps RDT&E Liaison Organization. RDT&E liaison functions for the Marine Corps are performed by a far-reaching network of Marines who are assigned to duty at or within the R&D organizations of DOD and the other Services; to joint-Service project/program offices; to industrial contractor's activities; and to FMF units in the field. Some of these personnel are clearly identified as Marine Corps Representatives/Liaison Officers/Project Officers, but many others occupy billets within the structure of the command to which they are assigned and are identified only by an appropriate billet title.

E6.4 Fleet Marine Forces (FMF). The Fleet Marine Forces also figure prominently in the Marine Corps organization for RDT&E by articulating operational requirements and providing a tailored vehicle for troop test and evaluation of material development in an operational environment.

E7 OFFICE OF THE CHIEF OF NAVAL RESEARCH (OCNR)

SECNAVINSTS 5430.20, 5430.67; OCNRINSTS 3910.3, 5430.1, OCNR Organizational Manual

The mission of the Office of the Chief of Naval Research (OCNR) is to plan, foster, and encourage scientific research in recognition of its paramount preservation of national security, and to provide for both basic research and exploratory development needs of DON, including program planning and execution of research and of Exploratory Development programs; to provide

technical advice to the CNO and the Secretary of the Navy in areas of Research and Exploratory Development; and to perform such other functions and tasks as may be directed.

The Chief of Naval Research (CNR) heads the OCNR, and is a principal advisor to ASN(R,E&S). The CNR is appointed by the President by and with the advice and consent of the Senate. The CNR is responsible to SECNAV through ASN(R,E&S).

To preserve the intent of the law which established ONR and achieve optimum integration of resources for basic research and exploratory development, all headquarters management functions have been incorporated into one organization, the OCNR. The OCNR consists of two lead offices: The ONR and the Office of Naval Technology (ONT). The lead offices are each headed by a civilian director: the Director, Office of Naval Research and the Director, Office of Naval Technology. The organization of OCNR is depicted in Figure E-8. The functions of OCNR:

- Provide leadership, management, and direction to the DON research and exploratory development programs and other RDT&E programs assigned to and conducted by OCNR
- Develop and formulate viable and responsive naval research and technology requirements based on current and projected Navy and Marine Corps long-range objectives and considerations of national security as expressed in such documents as Science and Technology Objectives, Warfare Plans, the CNO Program Analysis Memorandum process, etc., and provide a naval interface for joint service and joint agency scientific studies
- Conduct active liaison with the CNO and Navy and Marine Corps Headquarters and developmental activities to explore their areas of interest, ensure OCNR responsiveness to operational needs, and acquaint operational and developmental personnel with the significance of new research and technological results

- Coordinate naval research and promote cooperative research efforts within the Department of the Navy, with other elements of the Department of Defense, National Science Foundation, National Aeronautics and Space Administration, Department of Energy, and other government research groups
- Encourage, stimulate and maintain a vigorous Research Reserve Program to provide for mobilization and contingency response, performed in consonance with the OCNR mission, and interact with the active Navy in the solution of current problems
- Serve as the executive agent for the ASN(R,E&S) in the support and administration of the Naval Research Advisory Committee
- Provide, through the Office of the Chief of Naval Research, overall policy and direction to the patent program of the Navy
- Provide budgeting, accounting, and related reporting and data processing services for the ASN(R,E&S) required for management and control of the RDT&E, N Appropriation and for the CNO and the Commandant of the Marine Corps to fulfill their responsibilities in the planning, programming, and budgeting of the RDT&E Program
- Act as the DON focal point for worldwide research information.

E7.1 Office of Naval Research (ONR). ONR was established by public law in 1946 to plan, foster and encourage scientific research in recognition of its paramount importance as related to maintenance of future naval power and preservation of national security. The functions of ONR:

- Conduct research in augmentation of an conjunction with the research and development conducted by other DON activities

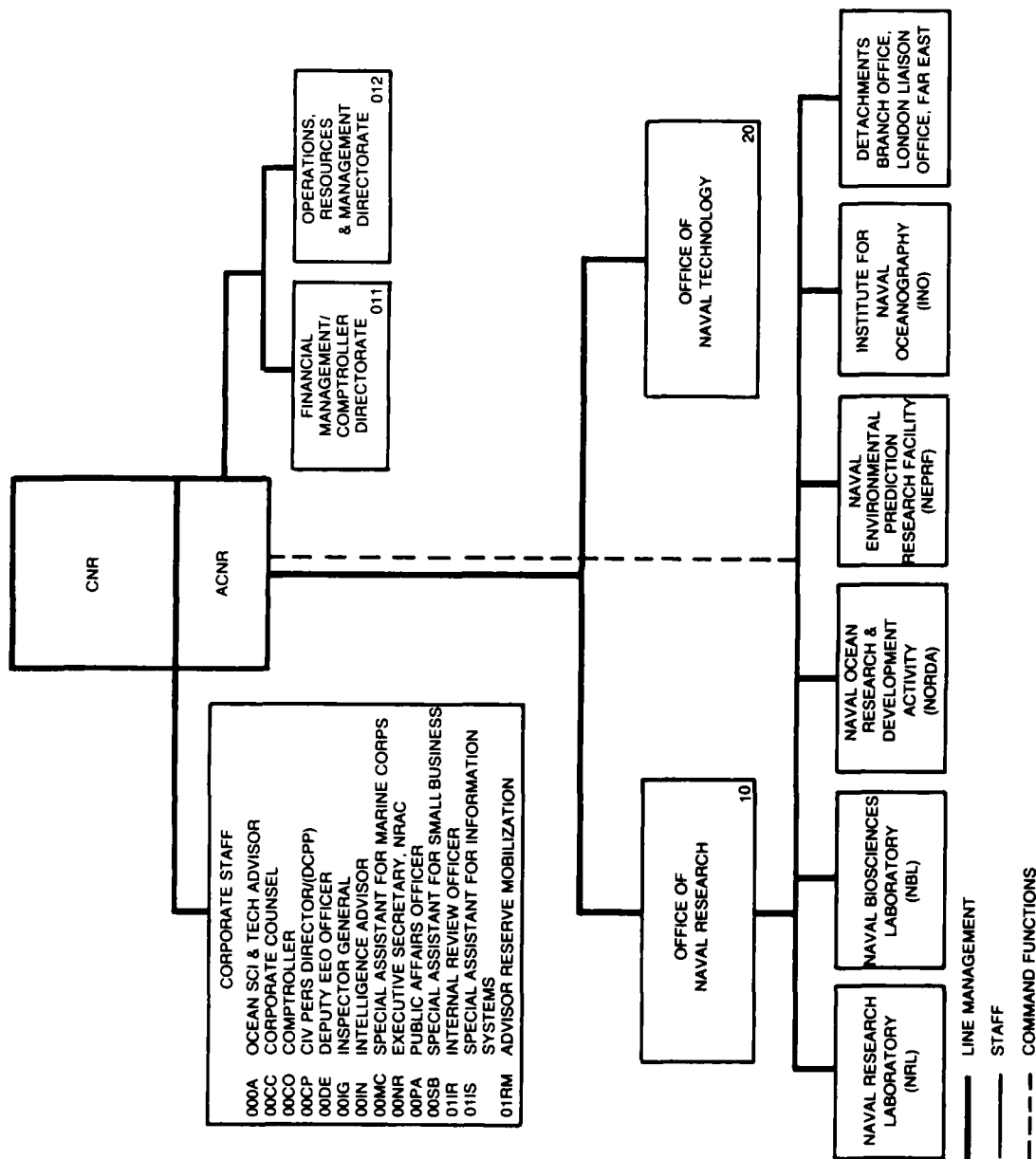


Figure E-8. Office of the Chief of Naval Research (OCNR)

E7.2

- Coordinate the Naval Basic Research Program
- Conduct a contract management program with educational institutions in support of all Federal agencies
- Administer the Navy's corporate research laboratories (NRL, NBL, NORDA, NEPRF, and INO.)

E7.2 Office of Naval Technology (ONT). ONT was established in October 1980 to implement the management process for the planning and execution of the DON Exploratory Development Program. The functions of ONT:

- Manage the DON Exploratory Development (6.2) Program, assessing, planning, programming, budgeting, directing, and monitoring the 62 program
- Manage the DON's oversight activities in regard to the industrial Independent Research and Development Program.

E8 NAVAL MEDICAL COMMAND (NAVMEDCOM)

R&D affairs within NAVMEDCOM are the responsibility of the Deputy Commander for Readiness and Support (MEDCOM-02), as assisted by the Assistant for Research and Development (MEDCOM-02D). Navy medical R&D is carried out under the direction of the Commanding Officer, Naval Medical Research and Development Command, Bethesda, Maryland.

NAVMEDCOMINSTS 5430.1, 5450.14

E8.1 Commanding Officer, Naval Medical Research and Development Command. The Commanding Officer, Naval Medical Research and Development Command manages and coordinates the Navy Medical Department Research, Development, Test, and Evaluation Program concerning the health, safety, and performance effectiveness of Navy and Marine Corps personnel.

In carrying out the above mission, the Commanding Officer, Naval Medical Research and Development Command commands the Navy Medical Department R&D laboratories; directs, plans, programs, budgets, and documents Navy Medical Department RDT&E efforts in response to Navy and Marine Corps RDT&E requirements; determines requirements for and recommends procurement, training, assignment and distribution of R&D personnel; performs RDT&E staff functions for the Commander NAVMEDCOM; provides professional medical and dental guidance in the planning and conduct of Navy and Marine Corps weapon systems, life support systems, and personnel protection; and coordinates Navy medical research efforts with the Navy Commands and Offices, other government agencies, civilian organizations, and foreign governments.

E9 COMMITTEES

E9.1 Defense Science Board (DSB). The Defense Science Board, composed of members appointed from civilian life by the Secretary of Defense upon the recommendation of the Under Secretary of Defense for Research and Engineering, advises the Secretary of Defense, through the Under Secretary for Research and Engineering, on scientific and technical matters of interest to the Department of Defense.

DODDIR 5129.22

E9.2 Joint Requirements and Management Board (JRMB). The JRMB serves as an advisory body to the SECDEF on systems acquisition policy and on certain major defense system acquisition programs. It meets to provide recommendations to SECDEF on milestone decisions and on other occasions as directed by SECDEF.

The JRMB permanent members are the USDRE (Chairman); USD(P); ASD(A&L); ASC(C); ASD(FM&P); DOT&E; DPA&E; the Service Secretaries, and the Chairman of the JCS.

DODDIR 5000.1, DODINST 5000.2

E9.3 Naval Research Advisory Committee (NRAC). As the Navy Department's senior research advisory group, the Committee advises the Secretary of the Navy, the CNO, the Commandant of the Marine Corps, and the CNR with respect to research and its utilization by the Navy, and on questions of policy on Navy-wide problems in science. It particularly advises on trends and potentialities of research relating to naval operations and administration of departmental research and development programs.

The fifteen members of the Committee are persons in civilian life who are preeminent in the fields of science, research, and development work. They are appointed by the Secretary of the Navy and serve for such term or terms as SECNAV may specify. One member must be from the field of medicine.

An Executive Committee, reporting to ASN(R,E&S), is responsible for identification and formulation of proposed NRAC efforts. The Executive Committee consists of the Director RD&A, CNR, DC/S(RD&S) Marine Corps, and two ASN(R,E&S) staff officers: the Principal Deputy ASN(R,E&S) and the Director Acquisition Management, International Programs, and Congressional Support.

SECNAVINST 5420.79

E9.4 Marine Corps Program Decision Meeting (MCPDM). The MCPDM reviews major acquisition programs at decision milestones and at other times when required and provides recommendations to the Commandant.

Membership consists of the Chief of Staff (chairman), the Deputy Chiefs of Staff, the Fiscal Director, Commanding General, MCDEC, the Director, C⁴ Division, and the Director of Intelligence. DC/S RD&S is Executive Secretary. The Chairman may designate other principals to sit with the MCPDM when the system under consideration involves matters in their areas of cognizance. The ASN(R,E&S) and the ASN(I&L) are also members of the MCPDM for major pro-

grams. For lower ACAT programs, the members listed above designate appropriate representatives.

MCO P5000.10

E9.5 CNO Executive Board (CEB). The CEB's mission is to advise the CNO. The CEB considers decision alternatives on all major acquisition programs prior to review by SECNAV and SECDEF.

The CEB consists of four permanent members: CNO; VCNO; Director Navy Program Planning (OP-090), and one associate member, Commandant of the Marine Corps. Other key principals may be ad hoc members as directed to attend.

Special panels of the CEB include the Ship Characteristics and Improvement Board (SCIB), Air Characteristics Improvement Board (ACIB), and Advanced Technology Panel (ATP).

OPNAVINST 5420.2

E9.5.1 Ship Characteristics and Improvement Board (SCIB). The SCIB assists the CNO in meeting the responsibilities pertaining to ship acquisition and conversion programs. SCIB tasks include the centralized formulation and coordination of the Navy's shipbuilding and conversion programs, the Fleet Modernization Program (FMP), and ship's characteristics determination for the active and reserve fleets. The SCIB is responsible for coordination of related planning, programming, budgeting, and support. The SCIB performs the functions of the ARC for ship acquisition programs.

Permanent members are OP-03 (Chairman), OP-090, OP-095, OP-02, OP-04, OP-05, COMNAVSEA, OP-01, OP-06, OP-098, CMC, OP-094, PRESINSURV, and SEA-08.

E9.5.2 Air Characteristics Improvement Board (ACIB). The ACIB assists the CNO in matters pertaining to aircraft acquisition and

E9.5.3

improvement by coordinating the formulation of Engineering Change Proposals (ECPs), future requirements, modifications, and all other matters pertaining to aircraft, aircraft systems, and air launched weapons, including cost control. The ACIB is responsible for coordination of planning, programming, budgeting, and support.

Permanent members are OP-05 (Chairman), senior aviator representatives from OP-090 and OP-095, AIR-09, Vice Commander NAVAIR, DCS Avn Marine Corps, OP-50, AIR-01, and representatives of ASN(S&L) and ASN(R,E&S).

E9.5.3 Advanced Technology Panel (ATP). The ATP assesses various threats from a technology and security point of view to make policy and programmatic recommendations to the CNO. In general, issues addressed by the ATP deal with U.S. and Soviet strategic and other selected naval forces, programs, and operations.

Permanent members are VCNO (Chairman), OP-090, OP-095, OP-098, OP-009, OP-06, and OP-02.

E9.6 Defense Resources Board (DRB). The primary role of the DRB is to help SECDEF manage the entire PPBS process.

DRB members are DEPSECDEF (Chairman); Chairman, JCS; secretaries of the Army, Navy, and Air Force; USD(P); USDR&E; ASD(A&L); ASD(C³I); ASD(C); ASD(FM&P); ASD(International Security Affairs); ASD(International Security Policy); General Counsel; DOT&E; DPA&E; Director (Strategic Defense Initiative Organization); and Associate Director OMB for National Security and International Affairs. The Service Chiefs are normally invited and usually attend meetings.

E9.7 Navy Program Decision Meetings (NPDM). The NPDM reviews acquisition programs at decision milestones and makes recommendations to the Program Decision Authority (PDA). The NPDM replaces the series of reviews formerly performed, i.e., DNSARC, CEB, ARC, SPR, etc.

The chairman of the NPDM varies with the level of the program—SECNAV for ACAT I and

IIS, CNO for ACAT IIC, and the Program Sponsor for ACAT III Programs. For ACAT IV programs, the SYSCOM ARB (see E9.8), chaired by the SYSCOM Commander, is the single NPDM. Participants in the meetings include appropriate personnel from the SYSCOM, OPNAV, CMC, and the Secretariate depending on the of the program under review. The Chairman listed above may designate a representative to chair the meeting.

SECNAVINST 5420.188

E9.8 Acquisition Review Board (ARB). The ARB, normally convened by a SYSCOM, reviews acquisition programs, provides advice and guidance to acquisition managers, and recommends alternative courses of action. ARB activities are intended to complement the review processes established by higher headquarters for major programs and selectively provide SYSCOM-level review for acquisition programs of all categories.

NAVMATINST 5000.19E (or superseding OPNAVINST)

E9.9 Board for Naval Studies—National Academy of Sciences. With appropriate attention to the influence of domestic economy, national objectives, social imperatives, and anticipated military requirements, the Board for Naval Studies of the National Academy of Sciences conducts and reports upon surveys and studies in the field of scientific research and development applicable to the operation and function of the Navy. Each particular project undertaken by the Board within this mission is precisely defined and mutually agreed to by the Board and the Director, RD&A (OP-098) acting for the Assistant Secretary of the Navy (R,E&S).

E9.10 Program Development Review Committee (PDRC). The PDRC is a flag-level group, chaired by OP-90, which reviews every step of the POM development process. The PDRC reviews each CPAM (see 3.3.5) and warfare appraisal prior to presentation to the CEB and acts as the review/decision forum for program

assignments. Deliberations of the PDRC are reviewed by the CEB-member superiors of PDRC members meeting as the Program Review Committee (PRC).

PDRC members include OP-90 (Chairman), OP-91, OP-92, ONR-100, OP-009, OP-095B, OP-09B, OP-006, OP-931, OPA, OP-094B, OP-12, OP-02B, OP-03B, OP-04B, OP-50, OP-60, OP-09RB, OP-098B, and CMC (R&P). SYSCOM Vice Commanders are invited for discussions on their areas of cognizance.

POM 90-1

E9.11 DON Program Strategy Board (DPSB). The DPSB, chaired by SECNAV, develops strategies, resolves issues, and reviews programs at the top level of DON management. Members are SECNAV, UNDERSECNAV, CNO, CMC, CHNAVMAT, OP-090, OP-90, OPA, DC/S(R&P), ASN(RE&S), ASN(M&RA), and ASN(FM).

POM 90-1

NOTE REGARDING DIRECTIVE NUMBERS

References to directives within this Guide are by series only; e.g., 3900.14, not to the effective edition within the series; e.g., 3900.14A.

The "Master Reference List" shows the version and issue date of each directive used in preparation of this edition of the Guide.

For recent information on the effective directive within a series, consult NAVPUBNOTE 5215, "Department of the Navy Directives Issuance System: Consolidated Subject Index."

APPENDIX F RESEARCH AND DEVELOPMENT LABORATORIES/CENTERS

TABLE OF CONTENTS

F1	Role of the In-House Research and Development Laboratories/Centers	F-1
F2	Management of Navy In-House R&D Laboratories/Centers	F-2
F3	OCNR Laboratories	F-2
F3.1	Naval Research Laboratory (NRL)	F-2
F3.2	Naval Ocean Research and Development Activity (NORDA)	F-2
F3.3	Naval Environmental Prediction Research Facility (NEPRF)	F-2
F4	COMSPAWAR Laboratories	F-3
F4.1	David W. Taylor Naval Ship Research and Development Center (DTNSRDC)	F-3
F4.2	Naval Air Development Center (NADC)	F-3
F4.3	Naval Coastal Systems Center (NCSC)	F-3
F4.4	Naval Ocean Systems Center (NOSC)	F-3
F4.5	Navy Personnel Research and Development Center (NPRDC)	F-3
F4.6	Navy Space Systems Activity (NSSA)	F-3
F4.7	Naval Surface Weapons Center (NSWC)	F-3
F4.8	Naval Underwater Systems Center (NUSC)	F-4
F4.9	Naval Weapons Center (NWC)	F-4
F5	COMNAVMEDCOM Laboratories	F-4
F5.1	Naval Medical Research Institute (NMRI)	F-4
F5.2	Naval Submarine Medical Research Laboratory (NSMRL)	F-4
F5.3	Naval Medical Research Unit No. 2	F-4
F5.4	Naval Medical Research Unit No. 3	F-4
F5.5	Naval Health Research Center (NHRC)	F-4
F5.6	Naval Dental Research Institute (NDRI)	F-5
F5.7	Naval Aerospace Medical Research Laboratory (NAMRL)	F-5
F5.8	Naval Biodynamics Laboratory (NBDL)	F-5
F6	COMNAVAIR Laboratories	F-5
F6.1	Naval Air Engineering Center (NAEC)	F-5
F6.2	Naval Air Propulsion Center (NAPC)	F-5
F6.3	Naval Training Systems Center (NTSC)	F-6

F6.4	Naval Air Test Center (NATC)	F-6
F6.5	Pacific Missile Test Center (PMTC)	F-6
F6.6	Naval Weapons Evaluation Facility (NWEF)	F-6
F7	COMNAVFAC Laboratory	F-6
F7.1	Naval Civil Engineering Laboratory (NCEL)	F-6
F8	COMNAVSEA Laboratories	F-6
F8.1	Naval Explosive Ordnance Disposal Technology Center (NEODTC)	F-6
F8.2	Naval Ordnance Missile Test Station (NOMTS)	F-6
F9	COMNAVSUP Laboratory	F-6
F9.1	Navy Clothing and Textile Research Facility (NCTRF)	F-6
F10	Not-for-Profit Activities Supporting Naval R&D	F-6
F10.1	Marine Physical Laboratory, Scripps Institution of Oceanography	F-6
F10.2	Naval Biosciences Laboratory	F-6
F10.3	Applied Research Laboratory, Pennsylvania State University	F-7
F10.4	Applied Research Laboratories, The University of Texas at Austin	F-7
F10.5	Applied Physics Laboratory, The University of Washington	F-7
F10.6	Applied Physics Laboratory, John Hopkins University	F-7
F10.7	Systems Research Center, Virginia Polytechnic Institute and State University	F-7
F10.8	Center for Naval Analyses (CNA)	F-7

APPENDIX F

RESEARCH AND DEVELOPMENT LABORATORIES/CENTERS

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

The Navy's extensive in-house laboratory complex provides an important portion of its research and development competence. This complex is woven deeply into the Navy's heritage. For example, the Naval Underwater Systems Center evolved from the Newport Naval Torpedo Station, founded in 1869. The David Taylor Naval Ship R&D Center's roots were the Experimental Model Basin (1899) and Engineering Experiment Station (1905). The Naval Research Laboratory, the first Navy Laboratory devoted primarily to basic research in the military sciences, was an outgrowth of recommendations of the Naval Consulting Board of World War I, headed by Thomas A. Edison.

The importance of in-house research and development laboratories in providing technical competence needed by the Government in carrying out its various activities is recognized by the Department of Defense. The DOD laboratories represent a critical and unique resource for solving the scientific and engineering problems, deficiencies, and needs of the military departments. DOD laboratories exist to achieve—in cooperation with universities and industry—a level of technological leadership that will enable the United States to develop, acquire, and maintain military capabilities needed for national security.

DODINST 3201.3; SECNAVINST 3910.3

F1 ROLE OF THE IN-HOUSE RESEARCH AND DEVELOPMENT LABORATORIES/CENTERS

The present complex of the Navy's in-house laboratories employs over 17,000 scientists and engineers. This complex represents an investment of about 1.2 billion dollars in land and buildings and an annual workload of more than 4.4 billion dollars, of which 62% is for RDT&E projects. This complex performs a wide variety of essential tasks ranging from basic research to the support of specialized equipment in the Fleet and field.

The basic purpose of the Navy's in-house laboratories—and of all other Navy RDT&E effort—is to assure that the Nation has the best, most up-to-date, capable, and effective Fleet and Marine Corps forces which modern technology can provide for the resources available.

To fulfill their obligation to the Fleet and further enhance their overall value to the Navy, the laboratories must not only be on-going producers of science and technology, but they must also be thoroughly alert to the present and future operational requirements of the Fleet. To satisfy this requirement, it is mandatory that first, the laboratories understand the operational problems of the Fleet, potential threats, and the capabilities and limitations of its personnel and its organization; and, secondly, the activities be so placed

and so used that they have an important voice in systems decisions and planning.

Over the years the Navy has succeeded in building up laboratories of high quality and demonstrable effectiveness. Moreover, the Navy has been fortunate in recruiting and retaining within these laboratories first-rate scientists and engineers who have developed extensive knowledge and understanding of naval problems. In trying out new ideas, laboratory scientists have often joined the operating forces to work side-by-side with military personnel. Many laboratory projects which have led to improved weapons and operating equipment were inspired and made practical by such close contact with Fleet units.

F2 MANAGEMENT OF NAVY IN-HOUSE R&D LABORATORIES/CENTERS

It is the policy of the Navy to develop and maintain Navy research and development laboratories of acknowledged excellence in those fields of science and technology pertinent to its needs in order to:

- Develop and prosecute scientific and technical laboratory programs having as their prime objective the improvement of Navy and Marine Corps capabilities, equipments, and systems
- Maintain a sufficient base of scientific and engineering talent, experienced in Navy and Marine Corps matters, to preclude the possibility of "technological surprise" due to unforeseen applications of science and technology by potential enemies
- Enable the Navy to enter the marketplace in the acquisition of new weapons and weapon systems as sophisticated buyers, with technical experience and expertise in the disciplines relevant to the development of such systems
- Maintain a technical memory of past technical problems and their solutions to assist in the support of deployed equipment and its improvement while in service

- Have continuously available the capability to exploit new technical opportunities on a quick-reaction basis, often under tight security controls, for the solution of Navy and Marine Corps problems.

ASN(R,E&S) is responsible for all matters related to RDT&E within the DON.

F3 OCNR LABORATORIES

F3.1 Naval Research Laboratory (NRL).

Location: Washington, D.C. 20375-5000
Telephone
 Commercial: 202-767-3200
 Autovon: X-297-3200

Mission: To conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward new and improved materials, equipment, techniques, systems, and related operational procedures for the Navy.

F3.2 Naval Ocean Research and Development Activity (NORDA).

Location: Bay St. Louis, Mississippi
 NSTL, Mississippi 39529-5004
Telephone
 Commercial: 601-688-4010
 Autovon: X-485-4010

Mission: To carry out a broadly based RDT&E program in ocean science and technology, with emphasis on understanding ocean processes through measurement and analysis, and the effects of the ocean environment on Navy systems and operations.

F3.3 Naval Environmental Prediction Research Facility (NEPRF).

Location: Monterey, California 93943-5006
Telephone
 Commercial: 408-646-2837
 Autovon: X-878-2837

Mission: To conduct research and development directed towards providing objective local, regional, and global environmental analysis and

prediction techniques; and provide planning, modeling, and evaluation services for determining the effect of environmental elements on naval weapon systems.

F4 COMSPAWAR LABORATORIES

F4.1 David W. Taylor Naval Ship Research and Development Center (DTNSRDC).

Location: Bethesda, Maryland 21402-1198
Annapolis, Maryland 21402-1198
Telephone
Commercial: 202-227-2828
Autovon: X-287-2828

Mission: To be the principal Navy RDT&E Center for naval vehicles and logistics and for providing RDT&E support to the U.S. Maritime Administration and the maritime industry.

F4.2 Naval Air Development Center (NADC).

Location: Warminster, Pennsylvania
18974-5000
Telephone
Commercial: 215-441-2000
Autovon: X-441-2000

Mission: To be the principal Navy RDT&E Center for naval aircraft systems, less aircraft-launched weapon systems.

F4.3 Naval Coastal Systems Center (NCSC).

Location: Panama City, Florida 32407-5000
Telephone
Commercial: 904-234-4011
Autovon: X-436-4011

Mission: To be the principal Navy RDT&E Center for mine and undersea countermeasures, special warfare, amphibious warfare, diving, and other Naval missions that take place primarily in the coastal regions.

F4.4 Naval Ocean Systems Center (NOSC).

Location: San Diego, California 92152-5000
Telephone
Commercial: 619-225-6011
Autovon: X-933-1011

Mission: To be the principal Navy RDT&E Center for command control, communications, ocean surveillance, surface- and air-launched undersea weapon systems, and submarine arctic warfare.

F4.5 Navy Personnel Research and Development Center (NPRDC).

Location: San Diego, California 92152-6800
Telephone
Commercial: 619-225-7106
Autovon: X-933-7106

Mission: To be the principal Navy RDT&E Center for manpower, personnel, education, training, and human factors, and for providing technical support to the CNO in these areas.

F4.6 Navy Space Systems Activity (NSSA).

Location: PO Box 92960
Worldway Postal Center
Los Angeles, California 90009
Telephone
Commercial: 213-643-1824
Autovon: X-833-1824

Mission: To provide for the development of assigned space systems. To provide for the interfaces between space systems and other Navy systems. To conduct long range studies and developments for space exploitation. To represent the Director, Navy Space Project and the Commander, Space and Naval Warfare Systems Command to the Commander, Air Force Space Division (SD). To provide management and engineering functions related to joint service space developments. To coordinate with the USAF Space Division on programs of mutual interest.

F4.7 Naval Surface Weapons Center (NSWC).

Location: Dahlgren, Virginia
22448-5000
Telephone
Commercial: 703-663-8531
Autovon: X-249-1110

F4.8

White Oak, Silver Spring, Maryland
20902-5000
Telephone
Commercial: 202-394-1796
Autovon: X-290-1796

Mission: To be the principal Navy RDT&E Center for surface ship weapons systems, ordnance, mines, and strategic systems support.

F4.8 Naval Underwater Systems Center (NUSC).

Location: Newport, Rhode Island
02841-5047
New London, Connecticut 06320
Telephone
Commercial: 401-841-4816
Autovon: X-948-4816

Mission: To be the principal Navy RDT&E Center for submarine warfare and submarine weapon systems.

F4.9 Naval Weapons Center (NWC).

Location: China Lake, California 93555-6001
Telephone
Commercial: 714-939-9011
Autovon: X-437-9011

Mission: To be the principal Navy RDT&E Center for air warfare systems (except antisubmarine warfare systems) and missile weapon systems, and the National range/facility for parachute test and evaluation.

F5 COMNAVMEDCOM LABORATORIES

F5.1 Naval Medical Research Institute (NMRI).

Location: Naval Medical Command, National Capital Region, Bethesda, Maryland 20814
Telephone
Commercial: 202-295-0021
Autovon: X-295-0021

Detachments at Dayton, Ohio, and Lima, Peru.

Areas of Responsibility: To conduct basic and applied research and development concerned with the health, safety, and efficiency of naval personnel.

F5.2 Naval Submarine Medical Research Laboratory (NSMRL).

Location: Naval Submarine Base
Groton, Connecticut 06349
Telephone
Commercial: 203-449-3264
Autovon: X-241-3264

Areas of Responsibility: To conduct medical research and development on problems peculiar to shipboard, submarine, and diving medicine.

F5.3 Naval Medical Research Unit No. 2.

Location: Manila, Republic of the Philippines
Telephone
88-96-11 (O'Sea Opr)

Detachment in Djakarta, Indonesia
Telephone
41-45-07 (O'Sea Opr)
Mail Add: APO San Francisco 96528

Areas of Responsibility: To perform medical research on diseases of military importance that are endemic and epidemic in the Far East.

F5.4 Naval Medical Research Unit No. 3.

Location: Cairo, Egypt
Telephone
820-727 (O'Sea Opr)
Mail Add: FPO New York 09527-1600

Areas of Responsibility: To perform medical research on diseases of military importance that are endemic and epidemic in the Middle East.

F5.5 Naval Health Research Center (NHRC).

Location: PO Box 85122
San Diego, California 92138
Telephone
Commercial: 619-225-2911
Autovon: X-933-2911

Areas of Responsibility: To conduct research and development on the medical and psychological aspects of health and performance of naval service personnel.

F5.6 Naval Dental Research Institute (NDRI).

Location: Naval Base
Great Lakes, Illinois 60088-5259
Telephone
Commercial: 312-688-4678
Autovon: X-792-4678

Areas of Responsibility: To conduct research, development, test and evaluation on problems of dental and oral health in the Navy and Marine Corps population, and on problems of fleet and field dentistry.

F5.7 Naval Aerospace Medical Research Laboratory (NAMRL).

Location: Naval Air Station
Pensacola, Florida 32508-5600
Telephone
Commercial: 904-452-3286
Autovon: X-922-3286

Areas of Responsibility: To conduct research and development, test, and evaluation in aerospace medicine and related scientific areas applicable to aerospace systems.

F5.8 Naval Biodynamics Laboratory (NBDL).

Location: PO Box 29407
New Orleans, Louisiana 70189
Telephone
Commercial: 504-255-4870
Autovon: X-485-2294

Areas of Responsibility: To conduct biomedical research on the effects of the mechanical forces encountered in ships and aircraft on naval personnel, establish human tolerance limits for these forces, and develop methods to protect personnel from such forces.

F6 COMNAVAIR LABORATORIES

F6.1 Naval Air Engineering Center (NAEC).

Location: Lakehurst, New Jersey
08733-5000
Telephone
Commercial: (201) 323-1110
Autovon: X-624-1110

Mission: To conduct programs of research, engineering, development, test and evaluation, systems integration, limited production, procurement, and fleet engineering support in: aircraft launching, recovery, and landing aid systems, and ground support equipment for aircraft and for airborne weapon systems. To provide, operate, and maintain test sites, facilities, and support services for tests of the above systems and equipment and to conduct research and development of equipment and instrumentation used in tests. To support the DOD standardization and specification program. To provide services and material and to operate and maintain aviation and other facilities in support of assigned programs and for other activities and units as designated by appropriate authority.

F6.2 Naval Air Propulsion Center (NAPC).

Location: PO Box 7176
Trenton, New Jersey 08628-0176
Telephone
Commercial: (609) 896-5600
Autovon: X-443-7011

Mission: To provide complete technical and engineering support for air breathing propulsion systems, including their accessories and components, and fuels and lubricants, to the Naval Air Systems Command and the Fleet by: managing and performing applied research and development leading to new propulsion systems; participating in the development and evaluation of new propulsion systems; conducting propulsion system tests and evaluation as necessary to ensure successful mission accomplishment and assisting in the determination of corrective action necessary for the resolution of operational Service problems; and to perform such other functions and tasks as directed by the Commander, Naval Air Systems Command.

F6.3

F6.3 Naval Training Systems Center (NTSC).

Location: Orlando, Florida
32813-7100
Telephone
Commercial: (305) 646-4436
Autovon: X-791-4436

Mission: To be the principal Navy center for RDT&E, acquisition, and logistics support of training systems, and to provide inter-service coordination and training systems support for the Army and Air Force.

F6.4 Naval Air Test Center (NATC). (See G6.3)

F6.5 Pacific Missile Test Center (PMTC). (See G6.4)

F6.6 Naval Weapons Evaluation Facility (NWEF). (See G6.5)

F7 COMNAVFAC LABORATORY

F7.1 Naval Civil Engineering Laboratory (NCEL).

Location: Port Hueneme, California 93043
Telephone
Commercial: 805-982-4528
Autovon: X-360-4528

Mission: To be the principal Navy RDT&E Center for shore and fixed-surface and subsurface ocean facilities and for the Navy and Marine Corps construction forces.

F8 COMNAVSEA LABORATORIES

F8.1 Naval Explosive Ordnance Disposal Technology Center (NEODTC).

Location: Indian Head, Maryland
20640-5070
Telephone
Commercial: 301-743-4225/4330
Autovon: X-364-4225/4330

Mission: To conduct RDT&E in technical matters concerning the detection, location,

rendering safe, and disposal of conventional and special weapons, guided missiles, underwater ordnance, improvised devices, and biological and chemical munitions, both U.S. and foreign, and provide the tools, equipment, and techniques required to discharge the Navy's single Manager responsibility to DOD and other agencies as directed by the Secretary of the Navy.

F8.2 Naval Ordnance Missile Test Station (NOMTS) (See G7.1)

F9 COMNAVSUP LABORATORY

F9.1 Navy Clothing and Textile Research Facility (NCTRF).

Location: 21 Strathmore Road
Natick, Massachusetts 01760-2490
Telephone
Autovon: X-256-4172

Mission: To conduct research, development, test and evaluation and engineering support for dress uniforms as well as environmental and protective clothing for the U.S. Navy.

F10 NOT-FOR-PROFIT ACTIVITIES SUPPORTING NAVAL R&D

F10.1 Marine Physical Laboratory, Scripps Institution of Oceanography.

Location: San Diego, California 92152
Telephone
Commercial: 619-225-7259
Autovon: X-933-7259

Contractor: Scripps Institution of Oceanography, University of California.

Mission: To generate knowledge about the ocean and its boundaries and application of this knowledge to the solution of Navy undersea problems.

F10.2 Naval Biosciences Laboratory.

Location: Naval Supply Center
Oakland, California 94625-5015

Telephone

Commercial: 415-466-5955

Autovon: X-836-5955

Contractor: University of California.

Mission: To perform bioscience research and development responsive to the needs of the DON and to provide integrated bioscience research activity from Research (6.1) through Advanced Development (6.3).

F10.3 Applied Research Laboratory, Pennsylvania State University.**Location:** PO Box 30

State College, Pennsylvania 16801

Telephone

Commercial: 814-865-6343

Contractor: Research Laboratories, Pennsylvania State University.

Mission: To apply knowledge about the ocean, its boundaries, and the surrounding media to the solution of Navy problems with major emphasis in the area of undersea weapons guidance and control systems, torpedoes, submarines, and ships.

F10.4 Applied Research Laboratories, The University of Texas at Austin.**Location:** PO Box 8029

Austin, Texas 78712

Telephone

Commercial: 512-835-3200

Contractor: Applied Research Laboratories, The University of Texas at Austin.

Mission: To apply knowledge about the ocean, its boundaries, and the surrounding media to the solution of Navy problems in surface, sub-surface, atmospheric, and tropospheric areas.

F10.5 Applied Physics Laboratory, The University of Washington.

Location: 1013 N.E. 40th St.
Seattle, Washington 98105

Telephone

Commercial: 206-543-1310

Contractor: Applied Physics Laboratory, The University of Washington.

Mission: To apply knowledge about the ocean and its boundaries and the surrounding media to the solution of Navy problems with major emphasis on undersea weaponry.

F10.6 Applied Physics Laboratory, Johns Hopkins University.**Location:** Johns Hopkins Road

Laurel, Maryland 20707

Telephone

Commercial: 301-792-7800

FTS: X-920-3370

Mission: To conduct research programs and investigations, engineering analyses, experiments, technical evaluations, and collection of information in fields of interest to the Navy and to other government agencies.

F10.7 Systems Research Center, Virginia Polytechnic Institute and State University.**Location:** Blacksburg, Virginia 24061**Telephone**

Commercial: 703-961-6122

Mission: To conduct research and development for computing support systems of interest to the Navy and to other government agencies.

F10.8 Center for Naval Analyses (CNA).**Location:** 4401 Ford Avenue

Alexandria, Virginia 22302-0268

Telephone

Commercial: 703-824-2000

Autovon: X-289-2638

Contractor: Hudson Institute.

Mission: To conduct a continuing program of research, studies, and investigations which will provide information needed for DON management decisions addressing the development and application of naval capabilities, help the operating forces of the DON in improving their effectiveness, and develop operational data for use in force planning and force evaluation studies.

SELECTED REFERENCES ON RESEARCH AND DEVELOPMENT LABORATORIES/CENTERS

DODDIR 3201.1, "Management of DOD Research and Development Laboratories," establishes policy and guidance for the management of DOD research and development (R&D) laboratories, assigns responsibilities for the management of DOD laboratories, and establishes the DOD Laboratory Management Task Force (LMTF).

DODDIR 3201.3, "DOD Research and Development Laboratories," amplifies long-term goals and objectives of DOD research and development (R&D) laboratories.

SECNAVINST 3910.3, "Navy Research and Development Laboratories," states policy and guidance and assigns responsibilities for the management of Navy research and development (R&D) laboratories.

NAVMATINST 5450.27C (or superseding SPAWARINST), "CNM Commanded Laboratories and Centers; mission and functions of," promulgates the functions to be performed by the

research and development centers under the command of the Chief of Naval Material.

NAVCOMPTINST 7044.5, "DOD In-House RDT&E Annual Activities Report," instructions for preparation of report.

Department of Defense In-house RDT&E Activities, a compendium of information on DOD RDT&E field activities issued annually by the Office of the Chief of Research and Development, Department of the Army. In addition to the missions, it provides data on finances, manpower, facilities and major programs for all designated DOD RDT&E field activities.

RDT&E Center Management Briefs, two volumes containing information on the missions, facilities, programs, major accomplishments, organization, personnel, funds, and functions/responsibilities of each of the 20 plus DON RDT&E organizations covered. (Published annually by COMSPAWARSYSCOM (SPAWAR-005)).

APPENDIX G TEST AND EVALUATION

TABLE OF CONTENTS

G1 Congressional Interest in Test and Evaluation	G-1
G2 T&E Responsibilities of Officials	G-1
G2.1 Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) (DUSDRE(T&E))	G-1
G2.2 Director of Operational Test and Evaluation (DOT&E)	G-2
G2.3 Director (RD&A) (OP-098)	G-3
G2.3.1 Test and Evaluation Division (OP-983)	G-3
G3 T&E Activities Reporting to CNO	G-3
G3.1 Board of Inspection and Survey	G-3
G3.1.1 General responsibilities	G-3
G3.1.2 Organization	G-4
G3.2 Operational Test and Evaluation Force (OPTEVFOR)	G-4
G3.2.1 Missions and tasks	G-4
G3.2.2 OPTEVFOR organization	G-4
G3.2.3 OPTEVFOR subordinate commands	G-5
G3.2.3.1 Air Test and Evaluation Squadron One (VX-1)	G-5
G3.2.3.2 Air Test and Evaluation Squadron Four (VX-4)	G-5
G3.2.3.3 Air Test and Evaluation Squadron Five (VX-5)	G-5
G3.2.3.4 Sunnyvale Test and Evaluation Detachment	G-5
G3.2.3.5 Fleet Development Groups	G-6
G3.3 Atlantic Fleet Weapons Training Facility	G-6
G4 T&E Activities Reporting to Commandant Marine Corps	G-6
G4.1 Marine Corps Development and Education Command (MCDEC)	G-6
G4.2 Marine Corps Operational Testing and Evaluation Activity (MCOTEA)	G-6
G5 T&E Capabilities of In-House Laboratories and Ranges	G-6
G5.1 Atlantic Undersea Test and Evaluation Center (AUTEC)	G-7
G5.2 Naval Weapons Center Ranges	G-7
G5.3 Naval Surface Weapons Center Ranges	G-7

G6 T&E Field Activities Reporting to Commander Naval Air Systems Command	G-7
G6.1 Naval Air Engineering Center	G-7
G6.2 Naval Air Propulsion Center	G-7
G6.3 Naval Air Test Center (NATC)	G-7
G6.4 Pacific Missile Test Center (PMTTC)	G-8
G6.5 Naval Weapons Evaluation Facility	G-8
G7 T&E Field Activities Reporting to Commander Naval Sea Systems Command	G-8
G7.1 Naval Ordnance Missile Test Station	G-8
G7.2 Naval Ship Weapons Systems Engineering Station (NSWSES)	G-8

APPENDIX G TEST AND EVALUATION

NOTE: For additional information on subjects discussed in this *Guide*, consult the listed references. Titles, current editions, and promulgation dates of directives on which this edition is based can be found in the Master Reference List following the appendixes. When a DoD directive has been promulgated as an enclosure to a Navy directive, the promulgating directive is shown in parentheses following the DoD listing.

This appendix provides information amplifying Chapter 7, "Test and Evaluation."

G1 CONGRESSIONAL INTEREST IN TEST AND EVALUATION

The importance of test and evaluation in the eyes of Congress is reflected in the following passages from Chapter 4, Title 10, United States Code:

Section 139 was originally included in the authorization act for FY 1972. Section 136(a) first appeared in the FY 1984 act.

139 Secretary of Defense: weapons development and procurement schedules for armed forces; reports; supplemental reports

(a) The Secretary of Defense shall submit to Congress each calendar year... a written report regarding development and procurement schedules for each weapon system for which... funds for procurement are requested in that budget. The report shall include data on operational testing and evaluation...

(b) The Secretary of Defense shall submit a supplemental report to Congress not less than thirty, or more than sixty, days before the award of any contract, or the exercise of any option in a contract, for the procurement of any such weapon system...

136a. Director of Operational Test and Evaluation; appointment; powers and duties.

(a) (1) There is a Director of Operational Test and Evaluation in the Department of Defense, appointed... by the President, by and with the advice and consent of the Senate...

(d) The Director reports directly without intervening review or approval to the Secretary of Defense...

(e) (1) The Secretary of a military department shall report promptly to the Director the results of all operational test and evaluation conducted by the military department and all studies conducted by the military department in connection with operational test and evaluation in the military department...

(f) (2) A final decision within the Department of Defense to proceed with a major defense acquisition program... may not be made until the Director has submitted to the Secretary of Defense the report with respect to the program required by subsection (b)(5) and the Committees on Armed Services and on Appropriations of the Senate and House of Representatives have received that report.

G2 T&E RESPONSIBILITIES OF OFFICIALS

G2.1 Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) (DUSDRE(T&E)). The DUSDRE(T&E) serves as the principal staff assistant to the USDRE for T&E matters within the DOD. General responsibilities include:

- Responsibility and authority for all DT&E conducted within DOD, including designating RDT&E programs as major for the purpose of DT&E oversight
- Serving as OSD focal point for review, coordination, and approval for each system's TEMP. The DOT&E and the DUSDRE(T&E) are the approval authorities for all major systems acquisition program TEMPs
- Review of new major defense acquisition program requirements, documents, system concept papers, decision-coordinating papers, and integrated program summaries for DT&E implications, resource requirements, and for providing comments to the DAE and the JRMB principals
- Monitoring and reviewing RDT&E to ensure adherence to approved policy, guidance, and standards
- Designating such observed to be present during any DT&E activities as may be required to assess test conduct or test results
- Providing, at each formal review of a system under development, the DAE and the JRMB principals with a detailed assessment of T&E conducted by the DOD Components
- Providing advice and making recommendations to the Secretary of Defense and issuing guidance to and consulting with the heads of DOD Components with respect to DT&E
- Administrative processing of nominations of tests for the joint test program as defined in the joint test procedures manual. At the time of joint test approval, the DOT&E or the DUSDRE(T&E), as appropriate, assumes responsibility for management and oversight
- Oversight of the Major Range and Test Facility Base (MRTFB), as defined in

DOD Directive 3200.11, as well as the development of all test resources, including aerial targets and threat simulator systems

- Administration of the Foreign Weapons Evaluation Program as outlined in DOD 5000.3-M-2
- Maintaining a DOD Test and Evaluation Master Library and Data Base
- Confirming, with advice from the ATSD(AE), that nuclear survivability and hardness objectives are achieved during DT&E.

DODDIR 5000.3

G2.2 Director of Operational Test and Evaluation (DOT&E). The DOT&E is the principal advisor and staff assistant to SECDEF on OT&E. His responsibilities include:

- Prescribing policies, procedures, and standards for OT&E
- Providing guidance for conduct of OT&E in general and specific OT&E for major systems
- Monitoring and reviewing OT&E to ensure adherence to approved policies and standards
- Coordinating JOT&E programs with special emphasis on obtaining information pertinent to operational doctrine, tactics, and procedures
- Taking actions to ensure that OT&E for major programs properly evaluates the operational effectiveness and suitability of systems
- Reviewing and making recommendations to SECDEF on all budgetary and financial matters relating to OT&E including facilities and equipment

- Reviewing and reporting to SECDEF on the adequacy of OT&E planning, priorities, support resources, execution, evaluation, and reporting for major programs

DODDIR 5141.2

G2.3 Director RD&A (OP-098). The Director, RD&A (OP-098) is responsible for implementing the responsibilities of the CNO with respect to the Navy RDT&E Program insofar as T&E-related functions are concerned. He is aided in implementation of these responsibilities by the Test and Evaluation Division (OP-983).

OPNAVINST 5430.48, OPNAV Organizational Manual

G2.3.1 Test and Evaluation Division (OP-983). The Test and Evaluation Division implements the responsibilities of the Director, RDT&E with respect to cognizance over planning, conduct, and reporting of all air, surface, and undersea/strategic test and evaluation. The Division:

- Acts as the sole OPNAV point of contact with the DUSDRE(T&E) and forwards to the DUSDRE(T&E) all appropriate Navy T&E documents and information
- Acts as Navy point of contact for all multi-service T&E
- Reviews operational requirements and development proposals to ensure adequate provision for T&E facilities/resources will be made
- Reviews Navy Decision Coordinating Papers, Decision Coordinating Papers, and changes thereto for adequacy and accuracy, and exercises Navy policy and control over T&E sections thereof
- Reviews Test and Evaluation Master Plans (TEMPs) to ensure compliance with T&E policies

- Reviews TEMPs to ensure proper planning for resources required for T&E of new weapon systems, including requirements for new or improved range capabilities and targets

- Exercises for the Director, RD&A sponsorship over all range and target matters including acting as program sponsor for the Navy elements of the Major Range and Test Facility Base and the Antiship Missile Defense Test Range Program

- Schedules all RDT&E fleet support.

G3 T&E ACTIVITIES REPORTING TO CNO

G3.1 Board of Inspection and Survey.

OPNAVINST 5420.70

G3.1.1 General responsibilities. The responsibilities of the Board of Inspection and Survey are set forth in Chapter 3, U.S. Navy Regulations, 1973. The following article covers the Board's T&E responsibilities:

0321 President, Board of Inspection and Survey

The President of the Board of Inspection and Survey, assisted by such other officers and such permanent and semi-permanent subboards as may be designated by the Secretary of the Navy, shall

- Conduct acceptance trials and inspections of all ships and service craft prior to acceptance for naval service
- Conduct acceptance trials and inspections on one or more aircraft of each type or model prior to final acceptance for naval service
- Examine at least once every three years, if practicable, each naval ship to determine its material condition and, if found unfit for continued service, report to higher authority
- Perform such other inspections and trials of naval ships, service craft, and aircraft as may be directed by the Chief of Naval Operations

G3.1.2 Organization. The work of the Board of Inspection and Survey is accomplished

through several permanent and semipermanent groups. BIS, Washington, D.C.; Sub-BIS Aviation Board, Atlantic, Norfolk, Virginia; Sub-BIS Pacific, San Diego, California; Sub-BIS Aviation Board, Patuxent River, Maryland; and semipermanent Boards at inactive ship maintenance facilities, naval districts, and various overseas locations. In addition, other sub-Boards may be convened as required by the President.

G3.2 Operational Test and Evaluation Force (OPTEVFOR).

As of the 31 December 1986 information cut-off for this 10th edition, it was anticipated that OPTEVFOR and MCOTEA would merge. (See discussion on page 3 of ASN(R E&S)'s Foreword.)

OPNAVINST 5440.47

G3.2.1 Missions and tasks.

Mission: It is the mission of OPTEVFOR to operationally test and evaluate specific weapon systems, ships, aircraft, and equipments, including procedures and tactics, where required; and, when directed by CNO, assist development agencies in the accomplishment of necessary development test and evaluation.

Tasks:

1. Carry out assigned responsibilities as an independent test agency for required operational test and evaluation under the command of CNO and serve as principal advisor to the CNO for all Department of the Navy matters pertaining to operational test and evaluation.

2. Provide the results of operational test and evaluation to the Defense Systems Acquisition Review Council (DSARC) production decision review(s) and to other reviews as directed by CNO.

3. Conduct operational tests on weapon systems including ships and aircraft.

4. Evaluate the operational effectiveness, suitability, and capability of tested weapon sys-

tems to meet the stated needs and performance criteria, reporting the results to CNO.

5. Develop tactics and procedures for the employment of specific weapon systems as directed by the CNO.

6. Assist the various development agencies in the conduct of developmental test and evaluation including the coordination, scheduling, and conduct of Fleet services. Report results of such assists, including assessment of operational suitability and ability to meet specified needs, to the development agency and CNO.

7. Review the T&E planning for new weapon systems, reporting to the CNO on the adequacy of the plan to address and resolve critical issues.

8. Monitor and report on such other tests and evaluation efforts as are directed by the CNO.

G3.2.2 OPTEVFOR organization. The Operational Test and Evaluation Force, with headquarters at Norfolk, Virginia, is a fleet force under:

- The Chief of Naval Operations for technical control and program guidance in the field of development, test, and evaluation.
- The Commander in Chief U.S. Atlantic Fleet for administrative support.
- CINCLANTFLT/CINCPACFLT for all operational matters under the purview of CINCLANT/CINCPAC.

At the Headquarters, the COMOPTEVFOR staff is organized along the lines which give primary consideration to types of warfare and to project administration rather than along the lines of a standard Navy staff. Under this type of organization, evaluation of equipments or systems is carried out within staff divisions manned by personnel with experience peculiar to the type of warfare for which their division is named.

For Pacific area operations, a separate staff under Deputy COMOPTEVFORPAC is located at

the Naval Air Station, North Island, San Diego, California. The qualifications of personnel assigned to this staff division are such as to permit supervision of all types of projects assigned to Commander Operational Test and Evaluation Force for prosecution in the Pacific Fleet area. The function of the Deputy COMOPTEVFOR-PAC is to act as the representative of the Force Commander for OPTEVFOR matters in the Pacific Fleet and, when directed, with West Coast agencies. In that capacity he maintains liaison with the Commander in Chief, U.S. Pacific Fleet; Pacific Fleet type, functional, and support commanders; and, when directed, heads of Pacific shore activities engaged in developmental work, including civilian contractors. He exercises staff cognizance as directed over OPTEVFOR projects being prosecuted in the Pacific Fleet area in that he administers, coordinates, supervises, or prosecutes projects, and prepares proposed project plans and reports as required. When requested by CINCPACFLT he renders assistance for Pacific Fleet assist projects. Ships assigned to the Deputy Commander for operational control remain under the administrative control of their type commander or district commandant.

G3.2.3 OPTEVFOR subordinate commands. The Operational Test and Evaluation Force comprises the following subordinate commands:

G3.2.3.1 Air Test and Evaluation Squadron One (VX-1).

Location:
Naval Air Station
Patuxent River, Maryland 20670
Tel: Comm. (301) 863-3607
Auto. X-356-3607

The function of Air Test and Evaluation Squadron One, located at NATC, Patuxent River, Maryland, is to test and/or evaluate airborne antisubmarine weapon systems, support systems, components, and equipment, and to develop tactics for their use. Tests are conducted by aircraft assigned to the squadron, including land planes, carrier types, fixed-wing types, and rotary-wing types.

G3.2.3.2. Air Test and Evaluation Squadron Four (VX-4).

Location:
Point Mugu, California 93042
Tel: Comm. (809) 982-7518
Auto. X-351-7518

The function of Air Test and Evaluation Squadron Four, located at Point Mugu, California, is to test and/or evaluate all-weather fighter weapon systems and air-launched guided missile weapon systems including associated equipment and aircraft, as directed by Commander, Operational Test and Evaluation Force. Tests and evaluations are carried out with aircraft assigned to the squadron for that purpose and with the assistance of Pacific Fleet units assigned by the Commander in Chief, U.S. Pacific Fleet, when required for specific projects.

G3.2.3.3. Air Test and Evaluation Squadron Five (VX-5).

Location:
Naval Weapons Center
China Lake, California 93555
Tel: Comm. (714) 939-5274
Auto. X-437-5274

The function of Air Test and Evaluation Squadron Five is to develop airborne attack weapon systems and support systems and to evaluate aircraft tactics, techniques, and procedures for the delivery of airborne special weapons. This evaluation is carried out by operational tests with aircraft assigned to the squadron for that purpose and with the assistance of Pacific Fleet units assigned by Commander in Chief, U.S. Pacific Fleet, when required for specific projects. The squadron works in close cooperation with the Naval Weapons Center at China Lake.

G3.2.3.4 Sunnyvale Test and Evaluation Detachment.

Location:
Naval Air Station
Moffet Field, California 94034
Tel: Comm. (408) 745-3110
Auto. X-462-0111

The function of the Sunnyvale Test and Evaluation Detachment is to develop and test new tactics, operating procedures, and techniques for command support capabilities by conducting

G3.2.3.5

carefully designed and recorded operational experiments. The objective is to increase the timely flow of information beyond the present capabilities of our air, surface, and subsurface collection and processing assets; also, to improve our ship and shore-based processing assets to provide a timely flow of up-to-date tactical, logistical, and environmental data to commanders.

G3.2.3.5 Fleet Development Groups. The Commander, Operational Test and Evaluation Force supervises and directs the prosecution of CNO-approved RDT&E projects assigned to such Fleet development groups as are, or may be, established. In these cases the appropriate Fleet Commander in Chief directs commanders of these groups to report to the Commander, Operational Test and Evaluation Force for additional duty in connection with the prosecution of projects so assigned.

G3.3 Atlantic Fleet Weapons Training Facility.

Location: Roosevelt Roads, Puerto Rico
Mail: FPO Miami, Florida 34051
Tel: Comm. (809) 863-2000

Detachments:

Three-Dimensional Underwater Range
St. Croix, Virgin Islands

Drone Control Site
Roosevelt Roads, Puerto Rico

Drone Control Site
St. Thomas, Virgin Islands

Drone Control Site
St. Croix, Virgin Islands

Air Impact and Close Air Support Range
Vieques Island

Mission: To operate, maintain, and develop weapons range facilities and services in direct support of the training of fleet forces and other activities and for the development, test, and evaluation of weapon systems.

G4 T&E ACTIVITIES REPORTING TO COMMANDANT MARINE CORPS

G4.1 Marine Corps Development and Education Command (MCDEC).

Location: Quantico, Virginia 22134
Tel: Comm. (703) 640-3141
Auto: X-278-3141

Detachments: Marine Corps Development Center (MCDC), Quantico, Virginia.

Mission: To develop, in coordination with agencies and representatives of other Services, the doctrine, tactics, techniques, and equipment employed by landing forces in amphibious operations. [MCDEC's mission also includes responsibilities in support of planning, education, and training.]

MCDEC's functions include broad responsibilities for Development Testing and Evaluation (DT&E) of Marine Corps systems and providing assistance to the Marine Corps Operational Testing and Evaluation Activity (MCOTEA) (see E6.2 and G4.2).

G4.2 Marine Corps Operational Testing and Evaluation Activity (MCOTEA).

Location: Quantico, Virginia
Tel: Comm. (703) 640-3141
Auto: X-278-3141

Mission: To support the material acquisition process by managing the Marine Corps OT&E program, to include planning and management responsibility for all OT&E, to conduct operational testing of all major systems and designated non-major systems, and to perform such other functions as may be directed by the Commandant of the Marine Corps.

As of the 31 December 1986 information cut-off for this 10th edition, it was anticipated that MCOTEA and OPTVEFOR would merge. (See discussion on page 3 of [ASN(R.F&S)'s Foreword].)

MCO 3960.2

G5 T&E CAPABILITIES OF IN-HOUSE LABORATORIES AND RANGES

All the in-house laboratories and centers have some T&E capabilities as related to their mission. (See Appendix F for information on the in-house laboratories and centers.) The following three

ranges encompass major air, ground, or sea areas and are major elements of the Navy T&E base.

G5.1 Atlantic Undersea Test and Evaluation Center (AUTEC).

Parent Laboratory: Naval Underwater Systems Center (F4.8)

Location: West Palm Beach, Florida and Andros Island, Bahamas

Mission: To provide a deep water test and evaluation facility for making underwater acoustic measurements; testing and calibrating sonars; and providing accurate underwater, surface, and in-air tracking data on ships, submarines, aircraft, and weapon systems in support of the Navy antisubmarine warfare and undersea research and development programs and of antisubmarine warfare fleet assessment and operational readiness.

G5.2 Naval Weapons Center Ranges.

Parent Laboratory: Naval Weapons Center (F4.9)

Location: China Lake, California

Mission: To conduct test and evaluation of air warfare systems (except antisubmarine warfare systems) and missile weapon systems.

G5.3 Naval Surface Weapons Center Ranges.

Parent Laboratory: Naval Surface Weapons Center (F4.7)

Location: Dahlgren, Virginia

Mission: To test Navy guns and mounts. The range testing may be subdivided into two broad categories: (1) proof and acceptance testing, the object of which is to assure the quality, performance, safety, and reliability of ordnance for the Fleet; and (2) developmental testing, the objective of which is to provide an experimental basis for new and improved weapons and systems.

G6 T&E FIELD ACTIVITIES REPORTING TO COMMANDER NAVAL AIR SYSTEMS COMMAND

G6.1 Naval Air Engineering Center.

Location: Lakehurst, New Jersey 08733
Tel: Comm. (201) 323-1110
Auto: X-624-1110

Mission: To conduct programs of research, engineering, development, test and evaluation, systems integration, limited production, procurement, and fleet engineering support in: aircraft launching, recovery, and landing aid systems, and ground support equipment for aircraft and for air-borne weapon systems. To provide, operate, and maintain test sites, facilities, and support services for tests of the above systems and equipment and to conduct research and development of equipment and instrumentation used in tests. To support the DOD standardization and specification program. To provide services and material and to operate and maintain aviation and other facilities in support of assigned programs and for other activities and units as designated by appropriate authority.

G6.2 Naval Air Propulsion Center.

Location: PO Box 7176
Trenton, New Jersey 08628
Tel: Comm. (609) 896-5600
Auto: X-443-7011

Mission: To provide complete technical and engineering support for air-breathing propulsion systems, including their accessories and components and fuels and lubricants, to the Naval Air Systems Command and the Fleet by: managing and performing applied research and development leading to new propulsion systems; participating in the development and evaluation of new propulsion systems; conducting propulsion system tests and evaluation as necessary to ensure successful mission accomplishment and assisting in the determination of corrective action necessary for the resolution of operational Service problems; and to perform such other functions and tasks as directed by the Commander, Naval Air Systems Command.

G6.3 Naval Air Test Center (NATC).

Location: Patuxent River, Maryland 20670
Tel: Comm. (301) 863-3000
Auto: X-356-0111

Mission: To be the Navy's principal aircraft weapons system test and evaluation activity through active test and evaluation participation in all phases of the weapons system life cycle process including support of technology demonstration and development; full-scale development (FSD); production support and fleet support; and fleet in-service engineering support. This includes providing a principal site for development test and evaluation during FSD as assigned and providing, as directed, range technical, engineering, and/or base support for Navy users and other DOD and government agencies.

G6.4 Pacific Missile Test Center (PMTC).

Location: Point Mugu, California 93042
Tel: Comm. (805) 982-7851
Auto: X-351-1110

Mission: To perform development test and evaluation, development support, and follow-on engineering, logistics, and training support for naval weapon, weapons systems, and related devices; provide major range, technical, and base support for Fleet users and other DOD and Government agencies.

G6.5 Naval Weapons Evaluation Facility.

Location: Kirtland AFB
Albuquerque, New Mexico 87117
Tel: Comm. (505) 844-0011
Auto: X-244-0011

Mission: To perform tests, evaluations, and provide technical support for nuclear and designated nonnuclear weapons and weapon systems; maintain direct liaison with all levels of command within the Navy and other Government agencies with respect to nuclear weapon safety; advise and assist the Chief of Naval Operations in promoting

and monitoring nuclear weapon safety and the prevention of nuclear weapon accidents or incidents; plan and conduct nuclear weapon system safety studies and reviews; plan and coordinate the Navy Nuclear Weapons Safety Program; and assist in the trials of naval aircraft as requested by the Board of Inspection and Survey.

G7 T&E FIELD ACTIVITIES REPORTING TO COMMANDER NAVAL SEA SYSTEMS COMMAND

G7.1 Naval Ordnance Missile Test Station.

Location: White Sands Missile Range, New Mexico 88002
Tel: Comm. (505) 678-2101
Auto: X-258-2101

Mission: To conduct and support assigned Navy Guided missile, rocket, gun, and directed energy programs, including ground and flight testing; to participate in the operation of the DOD missile test range at White Sands; and to perform additional tasks as directed by COM-NAVSEASYS COM.

G7.2 Naval Ship Weapons Systems Engineering Station (NSWSES).

Location: Port Hueneme, California 93043
Tel: Comm. (805) 982-4711
Auto: X-360-4711

Mission: To provide engineering, test and evaluation, logistics, systems assurance, and program management of assigned combat systems, weapon systems, weapons, support systems, equipments and components, and other functions as directed by the Commander, Naval Sea Systems Command.

SELECTED REFERENCES ON TEST AND EVALUATION

DODIR 3200.11, "Major Range and Test Facility Base," delineates policies and responsibilities for management and operation of the MRTEB

OPNAVINST 3960.10, "Test and Evaluation," sets forth policies and procedures for test and evaluation

APPENDIX H GLOSSARY

The following terms were selected from directives and other official documents.

Most of these definitions came originally from directives which bore a disclaimer along these lines: "As used in this directive, the following definitions will apply." Thus these definitions are presented with the following words of caution:

WARNING: The following definitions are presented for information only. It cannot be assumed that directive and manual writers using these terms in any particular instance are attempting to convey the precise meanings contained in these definitions.

Abbreviations and acronyms are listed inside the front and back covers.

ACCEPTANCE TRIALS—Trials and material inspection conducted underway by the trial board for ships constructed in a private shipyard to determine suitability for acceptance of a ship.

ACCRUED EXPENDITURES—Costs incurred during a given period representing liabilities incurred for goods and services received, other assets acquired, and performance accepted, whether or not payment has been made.

ACQUISITION—The process consisting of planning, designing, producing, and distributing a weapon system/equipment. Acquisition in this sense includes the conceptual, validation, full-scale development, production, and deployment/operational phases of the weapon systems/equipment project. For those weapon systems/equipments not being procured by a project manager, it encompasses the entire process from inception of the requirement through the operational phase.

ACQUISITION CATEGORY (ACAT)—One of four acquisition categories established by CNO which govern acquisition procedures and responsibilities and assign respective decision authority levels.

ACQUISITION RISK—The chance that some element of an acquisition program produces an unintended result with adverse effect on system effectiveness, suitability, cost, or availability for deployment.

ADVANCED DEVELOPMENT (Budget Category 6.3)—Includes all projects which have moved into the development of hardware for test.

AGENCY COMPONENT—A major organizational subdivision of an agency. For example: the Army, Navy, Air Force, and Defense Supply Agency are agency components of the Department of Defense. The Federal Aviation, Urban Mass Transportation, and the Federal Highway Administrations are agency components of the Department of Transportation.

AGENCY MISSIONS—Those responsibilities for meeting national needs assigned to a specific agency.

ALLOCATION—An authorization by a designated official of a component of the Department of Defense making funds available within a prescribed amount to an operating agency for the purpose of making allotments; i.e., the first subdivision of an apportionment.

ANALYSIS—The qualitative and/or quantified evaluation of information requiring technical knowledge and judgment.

APPORTIONMENT—A determination by the Office of Management and Budget as to the

amount of obligations which may be incurred when the nature of the work involved prevents the preparation of definitive requirements, specifications, or cost data. Sometimes called letter of intent.

APPROPRIATION SPONSOR—DCNO or a Director of a Major Staff Office charged with supervisory control over an appropriation.

AUTHORIZATION—Basic substantive legislation enacted by Congress which sets up a Federal program or agency either indefinitely or for a given period of time. Such legislation sometimes sets limits on the amount that can subsequently be appropriated, but does not usually provide budget authority.

AUTOMATIC TEST EQUIPMENT (ATE)—An equipment that is designed to automatically conduct analysis of functional or static parameters and to evaluate the degree of performance degradation and perform fault isolation of unit malfunctions.

AVAILABILITY—A measure of the degree to which an item is in an operable and committable state at the start of a mission when the mission is called for at an unknown (random) time.

BASELINE, APPROVED—The combination of approved program schedule, configuration, performance characteristics, acquisition, strategy, and other business aspects which constitute the variables reflected in either the appropriate acquisition milestone approval for that acquisition category or as reflected in the latest approved program management proposal action.

BENEFIT-COST ANALYSIS—An analytical approach to solving problems of choice. It requires the definition of objectives, identification of alternative ways of achieving each objective, and the identification, for each objective, of that alternative which yields the required level of benefits at the lowest cost. This same analytical process is often referred to as cost-effectiveness analysis when the benefits or outputs of the alternative cannot be quantified in terms of dollars.

BUDGET—A planned program for a fiscal period in terms of (a) estimated costs, obligations and expenditures, (b) source of funds for financing, including reimbursements anticipated and other resources to be applied, and (c) explanatory and workload data on the projected programs and activities.

BUDGET AUTHORITY—Authority provided by the Congress, mainly in the form of appropriations, which allows Federal agencies to incur obligations to spend or lend money. (Budget in Brief)

BUDGETING—The process of translating approved resource requirements (Manpower & Material) into time-phased financial requirements.

BUDGET MARK-UP—Revision of a budget in detail, at a review level, based on consideration of policies, programs, scheduling, cost factors, and other pertinent data, as a basis for approval or obligation authorization.

BUDGET YEAR—That fiscal year arrived at by adding one to the current fiscal year.

CHART, FLOW—A graphic presentation using symbols to show the step-by-step sequence of operations or procedures.

CHOP—Expression indicating concurrence.

COMBAT SYSTEM—The equipment, computer programs, people and documentation organic to the accomplishment of the mission of an aircraft, surface ship, or submarine; excludes the structure, material, propulsion, power and auxiliary equipment, transmissions and propulsion, fuel and control systems, and silencing inherent in the construction and operation of aircraft, surface ships and submarines.

COMBAT SYSTEM TEST INSTALLATION—A collection of subsystems including weapon, sensor, and information processing equipment together with their interfaces installed, for the purposes of early testing prior to the availability

of a first production item, at a test facility designed to simulate the essential parts of the production item.

COMMITMENT—A firm administrative reservation of funds, based upon firm procurement directives, orders, requisitions, authorizations to issue travel orders, or requests which authorize the recipient to create obligations without further recourse to the official responsible for certifying the availability of funds.

CONFIGURATION MANAGEMENT—A discipline applying technical and administrative direction and surveillance to (1) identify and document the functional and physical characteristics of a configuration item, (2) control changes to those characteristics, and (3) record and report change processing and implementation status.

CONTRACT—An agreement, enforceable by law, between two or more competent parties, to do or not to do something not prohibited by law, for a legal consideration.

CONTRACT, COST—A contract which provides for payment to the contractor of allowable costs, to the extent prescribed in the contract, incurred in performance of the contract.

CONTRACT, COST-PLUS-A-FIXED-FEE—A cost-reimbursement-type contract which provides for the payment of a fixed fee to the contractor. The fixed fee, once negotiated, does not vary with actual cost, but may be adjusted as a result of any subsequent changes in the scope of work or services to be performed under the contract.

CONTRACT, COST-PLUS-INCENTIVE-FEE—A cost-reimbursement-type contract with provision for a fee which is adjusted by formula in accordance with the relationship which total allowable costs bear to target costs. The provision for increase or decrease in the fee, depending upon allowable costs of contract performance, is designed as an incentive to the contractor to increase the efficiency of performance.

CONTRACT, COST-REIMBURSEMENT TYPE—A type of contract which provides for payment

to the contractor of allowable costs incurred in the performance of the contract, to the extent prescribed in the contract.

CONTRACT, COST-SHARING—A cost-reimbursement-type contract under which the contractor receives no fee but is reimbursed only for an agreed portion of its allowable costs.

CONTRACT, FIRM-FIXED-PRICE—A contract which provides for a price which is not subject to any adjustment by reason of the cost experience of the contractor in the performance of the contract.

CONTRACT, FIXED-PRICE—A type of contract which generally provides for a firm price, or under appropriate circumstances may provide for an adjustable price, for the supplies or services which are being procured.

CONTRACT, FIXED-PRICE WITH ESCALATION—A fixed-price type of contract which provides for the upward and downward revision of the stated contract price upon the occurrence of certain contingencies (such as fluctuations in the material prices and labor rates) which are specifically defined in the contract.

CONTRACT, LETTER—A written preliminary contractual instrument which authorizes immediate commencement of manufacture of supplies, or performance of services, including preproduction planning and the procurement of necessary materials. It is used when negotiation of a definite contract in sufficient time to meet the procurement need is not possible, as, for example, when the nature of the work involved prevents the preparation of definitive requirements, specifications, or cost data. Sometimes called letter of intent.

CONTRACT, TASK-TYPE—A master contract for research and development work, consisting of two parts, one of which sets forth general provisions and the other which is represented by one or more task orders issued thereunder.

CONTRACTOR SUPPORT—An arrangement during initial development or production of end-

items whereby a contractor furnishes required material and maintenance of an end-item or system pending assumption of supply support by the military service.

CONTROL—The act of evaluating, through the use of reports or records or by inspection of operations, current performance of assigned responsibilities as compared with planned objectives or established standards.

COST ANALYSIS—An analytical process employed to predict the resource requirements for weapon systems and programs.

COST ANALYSIS IMPROVEMENT GROUP (CAIG)—The principal advisory group to the DSARC on matters related to costs.

COST CATEGORY—One of three types of costs into which the total cost of a program element is divided: (1) research and development, (2) investment, and (3) operating.

COST-CENTER—An administrative unit selected for the purpose of accumulating and controlling costs. It usually: (1) consists of a natural grouping of machines, methods, processes, or operations; (2) is identified with single management responsibility; and (3) is made up of elements which have common cost characteristics.

COST/EFFECTIVENESS ANALYSIS—A method of examining alternative means of accomplishing a desired military objective/mission for the purpose of selecting weapons and forces which will provide the greatest military effectiveness for the cost.

COST GROWTH—A term related to the net change of an estimated or actual amount over a base figure previously established. The base must be relatable to a program, project or contract and be clearly identified including source, approval authority, specific items included, specific assumptions made, date and the amount.

COST MODELS—A method for making rapid estimates of dollar and manpower requirements to support force structure which are accurate enough to detect significant differences in the

cost-effectiveness of alternatives. This is done by using an assembled set of Navy program factors and a computerized set of estimating relationships to compute statistical averages.

CRITICAL INTELLIGENCE PARAMETERS—Threat parameters, such as numbers, types, mix, or characteristics of projected enemy systems, that are most critical to the effectiveness of a U.S. weapon system.

CRITICAL ISSUES—Those aspects of a system's capability, either operational, technical, or other, that must be questioned before a system's overall worth can be estimated, and that are of primary importance to the decision authority in reaching a decision to allow the system to advance into the next acquisition phase.

CURRENT ESTIMATE (CE)—(See C2.1)

DATA—Any representations such as characters or analog quantities to which meaning may be assigned. Data may be expressed in digital, graphic, or symbolic form.

DATA SYSTEM—Combinations of personnel efforts, forms, formats, instructions, procedures, data elements and related data codes, communications facilities, and automatic data processing equipment, which provide an organized and interconnected means, either automated, manual, or a mixture of these for recording, collecting, processing and communicating data.

DEFENSE RESEARCH—Scientific study and experimentation directed toward increasing knowledge and understanding in those fields of the physical, engineering, environmental, biological-medical, and behavioral-social sciences directly related to explicitly-stated long-term national security needs.

DEMONSTRATION AND VALIDATION DECISION—Milestone I decision by which the SECDEF reaffirms the mission need and approves one or more selected alternatives for competitive demonstration and validation.

DEPARTMENT OF THE NAVY FIVE-YEAR PROGRAM (DNFYP)—The Navy's official pro-

gramming document. This publication consists of volumes or booklets and displays the Navy's portion of the Five-Year Defense Program (FYDP). SECDEF-approved forces, manpower, and financial data are given for each Navy Program Element for the current, budget and program years.

DESIGN TO COST—A management concept wherein rigorous cost goals are established during development, and the control of systems costs (acquisition, operating and support) to these goals is achieved by practical tradeoffs between operational capability, performance, cost, and schedule. Cost, as a key design parameter, is addressed on a continuing basis and as an inherent part of the development and production process.

DETERMINATIONS AND FINDINGS (D&F)—Documents (signed by (1) the Secretary of a Department, (2) the Head of a Procuring Activity, or (3) the Contracting Officer) that justify the use of the authority to enter into contracts by negotiation.

DEVELOPING AGENCY (DA)—The Systems Command or CNM-designated project manager assigned responsibility for the development, test and evaluation of a weapon system, subsystem or item of equipment.

DEVELOPMENT ESTIMATE (DE)—(See C2.1).

DEVELOPMENT TEST AND EVALUATION (DT&E)—That test and evaluation conducted to assist the engineering design and development process and to verify attainment of technical performance specifications and objectives.

DISCOUNT RATE—The interest rate used to discount or calculate future costs and benefits so as to arrive at their present values.

DISTRIBUTION STATEMENT—A statement used in marking a technical document to denote the conditions of its availability for distribution, release, or disclosure at the initiation of a component of the DOD.

DOCUMENT—Any recorded information or data regardless of physical form or characteristics, including but not limited to the following:

(1) Written or printed material: (whether handwritten, printed or typed);

(2) Data processing cards or tapes;

(3) Maps, charts, photographs, negatives, moving or still films, or film strips;

(4) Paintings, drawings, engravings, or sketches;

(5) Sound or voice recordings;

(6) Reproductions of the foregoing by any means or process.

DOD COMPONENTS—The Office of the Secretary of Defense, the Military Departments, the Organization of the Joint Chiefs of Staff, the Unified and Specified Commands, and the Defense Agencies.

ECONOMIC ANALYSIS—A systematic approach to the problem of choosing how to employ scarce resources and an investigation of the full implications of achieving a given objective in the most efficient and effective manner.

EFFECTIVENESS—The performance or output received from an approach or a program. Ideally, it is a quantitative measure which can be used to evaluate the level of performance in relation to some standard, set of criteria, or end objective.

ENGINEERING CHANGE—An alteration in the physical or functional characteristics of a system or item delivered, to be delivered, or under development, after establishment of such characteristics.

ENGINEERING DEVELOPMENT (Budget Category 6.4)—Includes those projects in full-scale development for Service use but which have not yet received approval for production or had production funds included in the DOD budget submission for the budget or subsequent fiscal year.

EXPENDITURES—Charges against available funds. They are evidenced by vouchers, claims, or other documents approved by competent

authority. Expenditures represent the actual payment of funds.

EXPENSES—Costs of resources consumed in use.

FIVE-YEAR DEFENSE PROGRAM—The official document which summarizes the SECDEF-approved plans and programs for the Department of Defense. It is published at least once annually.

FOLLOW-ON OPERATIONAL TEST AND EVALUATION (FOT&E)—All OT&E after the Production and Deployment Decision.

INFORMATION ANALYSIS CENTER—A DOD-wide service directed toward collecting technical information in a specific area of effort and its evaluation and filtering into the form of condensed data, summaries or state-of-the-art reports.

INFORMATION RETRIEVAL SYSTEM—A system for locating and selecting, on demand, certain documents or other graphic records relevant to a given information requirement from a file of such material. *Examples of information retrieval systems are classification, indexing, and machine searching systems.*

INFORMATION SYSTEM—The network of all communication methods within an organization. It includes information exchanges upward, downward, or laterally to accomplish the objectives of the organization as well as information fed back to be used in management appraisal, progressing, controlling, scheduling, planning and also in replanning, rescheduling and other phases, to assure the appropriate end result.

INITIAL OPERATIONAL TEST AND EVALUATION (IOT&E)—All OT&E prior to the Production and Deployment Decision.

INTEGRATED LOGISTIC SUPPORT (ILS)—A disciplined, unified, and iterative approach to the management and technical activities necessary to: (a) integrate support considerations into system and equipment design; (b) develop support requirements that are related consistently to readiness objectives, to design, and to each other;

(c) acquire the required support; and (d) provide the required support during the operational phase at minimum cost.

INTEROPERABILITY—The ability of systems, units, or forces to provide services to, and accept services from, other systems, units or forces, and to use the services so exchanged to enable them to operate together effectively.

INVESTMENT COSTS—Costs of real property and equipment.

LABORATORY—A government-operated installation at which an important fraction of the work is research and development.

LAND-BASED TEST SITE (LBTS)—A facility duplicating/simulating as many conditions as possible of a system's planned operational installation and utilization.

LEAD-TIME, PROCUREMENT—The time interval between the initiation of procurement action and the receipt into the supply system of material purchased as a result of such action.

LEAD-TIME, PRODUCTION—The time interval between the placement of a contract and receipt into the supply system of material acquired.

LIFE-CYCLE COST—The total cost to the Government for the development, acquisition, operation and logistic support of a system or set of forces over a defined life span.

LIFE CYCLE COSTING—Life Cycle Costing (LCC) is an acquisition or procurement technique which considers operating, maintenance, and other costs of ownership as well as acquisition price in the award of contracts for hardware and related support.

LOGISTICS SUPPORT—The supply and maintenance of material essential to proper operation of a system in the force.

LOGISTICS SUPPORTABILITY—The degree to which the planned logistics (including test equipment, spares and repair parts, technical data, sup-

port facilities, and training) and manpower meet system availability and wartime usage requirements.

LOW RATE INITIAL PRODUCTION (LRIP)—The production of a system in limited quantity to be used in OT&E for verification of production engineering and design maturity and to establish a production base.

MAINTAINABILITY—A characteristic of design and installation which is expressed as the probability that an item will be retained in or restored to a specified condition within a given period of time, when the maintenance is performed in accordance with prescribed procedures and resources.

MAINTENANCE ENGINEERING—That activity of equipment maintenance which develops concepts, criteria and technical requirements during the conceptual and acquisition phases to be applied and maintained in a current status during the operational phase to assure timely, adequate and economic maintenance support of weapons and equipments.

MAJOR RANGE AND TEST FACILITY BASE (MRTFB)—The complex of major DOD ranges and test facilities.

MAJOR SYSTEM ACQUISITION—A system acquisition program designated by the SECDEF to be of such importance and priority as to require special management attention.

MANAGEMENT AND SUPPORT (Budget Category 6.5)—Includes research and development effort directed toward support of installations or operations required for general research and development use.

MANAGEMENT INFORMATION PAPER RDT&E (MIP)—Documents, used in support of the proposed program/budget, which describe each project programmed under the RDT&E, N Appropriation.

MANUFACTURING TECHNOLOGY—Any action undertaken which has as its objective (1) the timely establishment or improvement of the

manufacturing processes, techniques, or equipment required to support current and projected programs, and (2) the assurance of the ability to produce, reduce leadtime, insure economic availability of end items, reduce costs, increase efficiency, improve reliability, or to enhance safety and antipollution measures.

METROLOGY—The science of weights and measures used to determine conformance to technical requirements including the development of standards and systems for absolute and relative measurements.

MILITARY INTER-DEPARTMENTAL PURCHASE REQUEST (MIPR)—A procurement order issued by one Military Service on another Military Service to procure, produce or deliver services, supplies or equipment to or for the ordering Service.

MISSION AREA—A major subdivision of a mission, so extracted that it generally parallels the traditional naval warfare and support areas.

MISSION AREA—A segment of the Defense mission as established by the SECDEF.

MISSION-ESSENTIAL WEAPON SYSTEM (MEWS)—A system, subsystem, or component that performs a combat mission or is essential to a mission capability. This includes combat-mission-essential personnel, command, control, and communication, electronic warfare, and hull mechanical and electrical systems, as well as weapons and weapon systems. A platform with associated systems is also defined as a weapon system.

MISSION NEED—A required capability within an agency's overall purpose, including cost and schedule considerations.

NAVAL VEHICLES—Selfpropelled, boosted, or towed conveyances used for the strategic and tactical deployment of forces, weapons, materials, and supplies in support of naval warfare.

NEW OBLIGATIONAL AUTHORITY (NOA)—Authority becoming newly available for a given year, provided by current and prior actions of the

Congress, enabling Federal Agencies to obligate the government to pay out money.

NONDEVELOPMENT ITEM (NDI)—Already developed and available hardware and/or software capable of fulfilling Navy requirements, thereby minimizing or eliminating the need for costly, time-consuming Government-sponsored R&D programs. NDI is usually off-the-shelf or commercial-type products, but may also include equipment already developed by or for the Navy, other military services, or foreign military forces.

OBLIGATION—The amount of an order placed, contract awarded, service received, or other transaction which legally reserves a specified amount of an appropriation or fund for expenditure.

OPERABILITY—The design characteristic of the system/equipment that will assure personnel feasibility and optimum utilization of operator personnel.

OPERATING BUDGET, APPROVED—An authorization to an R&D field activity on NAVCOMPT Form 2189-1 (Approved Operating Budget) that constitutes authority to that activity for incurring obligations within the amount authorized for each direct program R&D effort assigned therein.

OPERATIONAL AVAILABILITY (OA)—An index of a weapon system *material readiness*, including system software where applicable, in a *mission* environment. It is a measure of the probability of an item's being in a condition, generally referred to as "up", such that it can perform its intended function, within acceptable limits of degradation, when called upon.

OPERATIONAL CAPABILITY—A subdivision of a mission area which more specifically delineates appropriate operational functions.

OPERATIONAL EFFECTIVENESS—The overall degree of mission accomplishment of a system used by representative personnel in the context of the organization, doctrine, tactics, threat (including countermeasures and nuclear threats), and environment in the planned operational employment of the system.

OPERATIONAL REQUIREMENT (OR)—The basic requirement document for all Navy acquisition programs requiring research and development effort.

OPERATIONAL SUITABILITY—The degree to which a system can be placed satisfactorily in field use, with consideration being given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, manpower supportability, logistic supportability, and training requirements.

OPERATIONAL SYSTEMS DEVELOPMENT—Includes these projects still in full-scale development but which have received approval for production through JRMB or other action, or production funds have been included in the DOD budget submission for the budget or subsequent fiscal year.

OPERATIONAL TEST AND EVALUATION (OT&E)—The field test under realistic combat conditions, of any item (or key component of) weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability of the weapons, equipment, or munitions for use in combat by typical military users; and the evaluation of the results of such test.

OUTLAYS—Expenditures or the actual amount of funds that must be drawn from the Treasury for goods and services received during the fiscal year under review.

PARAMETRIC COST ESTIMATE—An estimate which predicts costs by means of explanatory variables such as performance characteristics, physical characteristics, and characteristics relevant to the development process, as derived from experience on logically related systems. (Report of Commission on Government Procurement)

PILOT PRODUCTION—The controlled manufacture of limited numbers of an item for service test and evaluation purposes using manufacturing drawings and specifications which have been developed for quantity production and with tooling that is representative of that to be used in unlimited production.

PLANNING ESTIMATE (PE)—(See C2.1)

PLANNING/PROGRAMMING/BUDGETING SYSTEM (PPBS)—An integrated system for the establishment, maintenance, and revision of the FYDP and the DOD budget.

PREPRODUCTION PROTOTYPE—An article in final form employing standard parts, representative of articles to be produced subsequently in a production line.

PROCUREMENT—Includes purchasing, renting, leasing, or otherwise obtaining supplies or services. It also includes all functions that pertain to the obtaining of supplies and services, including description but not determination of requirements, selection and solicitation of sources, preparation and award of contracts, and all phases of contract administration.

PRODUCIBILITY—The degree to which articles can be replicated, given the considerations of manufacturing techniques, availability of materials and labor, and total costs.

PRODUCTION ACCEPTANCE TEST AND EVALUATION (PAT&E)—Test and evaluation of production items to demonstrate that the items procured fulfill the requirements and specifications of the procuring contract or agreements.

PRODUCTION AND DEPLOYMENT DECISION—The Milestone III decision by which the SECDEF reaffirms the mission need, confirms the system as ready for production, approves the system for production, and authorizes the Component to deploy the system to the using activity.

PRODUCTION ESTIMATE (PE)—(See C2.1)

PROGRAM—A plan or scheme of action designed for the accomplishment of a definite objective which is specific as to the time-phasing of the work to be done and the means proposed for its accomplishment, particularly in quantitative terms, with respect to manpower, material, and facilities requirements.

PROGRAM—A combination of program elements designed to express the accomplishment of

a definite objective or plan which is specified as to the time-phasing of what is to be done and the means proposed for its accomplishment. Programs are aggregations of program elements and, in turn, aggregate to the total five-year defense program.

PROGRAM ACQUISITION COST—The development, procurement, and construction cost to acquire a major defense system.

PROGRAM ACQUISITION COST (PAC)—The development, procurement, and system specific construction cost to acquire the defense system.

PROGRAM/BUDGET DECISION (PBD)—A Secretary of Defense decision, in prescribed format, authorizing changes to a submitted budget estimate and the FYDP.

PROGRAM CHANGE DECISION (PCD)—A Secretary of Defense decision, in prescribed format, authorizing changes to the Five-Year Defense Program.

PROGRAM CHANGE REQUEST (PCR)—Proposal, in prescribed format, for out-of-cycle changes to the approved data in the Five-Year Defense Program.

PROGRAM DECISION MEMORANDUM (PDM)—A document which provides decisions of the Secretary of Defense on POMs.

PROGRAM ELEMENT—The basic building block of the Five-Year Defense Program, the program element is a description of a mission by the identification of the organizational entities and resources needed to perform the assigned mission. Resources consist of forces, manpower, material quantities, and costs, as applicable.

PROGRAM EVALUATION—Economic analysis of on-going actions to determine how best to improve approved program/project based on actual performance. Program evaluation studies entail a comparison of actual performance with the approved program/project.

PROGRAM MANAGEMENT—Management of a project, using organizational or procedural align-

ments, which will permit varying degrees of intensified direction. This may apply to management of a complete system or any portion thereof, and it may include all phases of development, production, and distribution, or be limited to a single phase, e.g., development.

PROGRAM MANAGER—The individual in the DOD to manage a major system acquisition program.

PROGRAM MANAGER CHARTER—A document approved by the appropriate authority stating the program manager's responsibility, authority, and accountability in the management of a major system acquisition project.

PROGRAMMING (DOD PROGRAMMING SYSTEM)—The process of translating planned military force requirements into time-phased manpower and material resource requirements.

PROJECTED OPERATIONAL ENVIRONMENT (POE)—Statement of projected conditions of operations of each class of naval unit used in establishment of manning requirements. The POE statement includes wartime and peacetime operating conditions as well as other information pertinent to developing the Ship Manning Document (SMD).

PROJECT ORDER—A specific, definite and certain order issued under the authority contained in 41 U.S.C. 23 for the manufacture of materials, supplies, and equipment, or for other work or services which, when placed with and accepted by a separately managed and financed Government-owned and operated establishment, serves to obligate appropriations in the same manner as orders or contracts placed with commercial enterprises.

PROVISIONING, INITIAL—The process of determining the range and quantity of items (i.e., spares and repair parts, special tools, test equipment and support equipment) required to support and maintain an end item of material for an initial period of service.

PROVISIONING, PHASED—A management refinement to the provisioning process whereby procurement of all or part of the total computed

quantity of selected items is deferred until the later stages of production, thereby enhancing the ability of the provisioning activity to predict requirements more reliably.

QUALITY ASSURANCE—A planned and systematic pattern of all actions necessary to provide adequate confidence that material conforms to established technical requirements and achieves satisfactory performance in service.

R&D RESPONSIBILITY CENTER—A designated organizational element or a major subdivision thereof such as a laboratory, an operating division, or a service center at an R&D installation for which overall responsibility for specified operations has been assigned to one individual and for which a separate budget has been established.

RAPID DEVELOPMENT CAPABILITY FOR WARFARE SYSTEMS (RDC)—The ability to react immediately to newly discovered enemy threats through special administrative procedures to expedite all or any portion of the development, test, evaluation and subsequent procurement/production of either modifications to existing warfare systems/components or new warfare systems/components.

RDT&E PROGRAM—Consists of all efforts funded from the RDT&E appropriation regardless of program category or program element.

REIMBURSABLE ORDER—An order for work or services accepted by a government office/activity which is initially financed by the performing activity. All cost incurred will result in reimbursement to the performing appropriation.

RELIABILITY—The probability that an item will perform its intended functions for a specified period of time under stated conditions.

REPROGRAMMING/REPROGRAMMING ACTIONS—Changes in the application of financial resources from the purposes originally contemplated and budgeted for, testified to, and described in the justification submitted to the Congressional Committees in support of fund authorizations and budget requests.

REQUIRED OPERATIONAL CAPABILITIES STATEMENT (ROC)—A composite listing of all required operational capabilities for a class of ship or types of aircraft squadrons as assigned by the Chief of Naval Operations. A ROC, together with a statement of Projected Operational Environment (POE), provides the necessary detail and criteria to establish manning requirements.

REQUIRED OPERATIONAL CAPABILITY (ROC)—A brief statement of a specific operational capability which is required in the mid-range period.

RESEARCH (Budget Category 6.1)—Includes all effort of scientific study and experimentation directed toward (1) increasing knowledge and understanding in those fields of the physical, engineering, environmental and life sciences related to long-term national security needs. It provides fundamental knowledge required for the solution of military problems. It forms a part of the base for (a) subsequent exploratory and advanced developments in Defense-related technologies, and (b) new and improved military functional capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support.

SCIENTIFIC AND TECHNICAL INFORMATION (STI)—Communicable knowledge or information resulting from or pertaining to the conduct and management of R&E efforts. STI is used by administrators, managers, scientists, and engineers engaged in scientific and technological efforts and is the basic intellectual resource for and result of such effort.

SELECTED ACQUISITION REPORT (SAR)—A report prepared for the SECDEF which summarizes current estimates of technical, schedule, and cost performance in comparison with the original plans and current program.

SHOULD-COST STUDY—A comprehensive, in-depth, management analysis, which involves examination and evaluation of all phases of a

contractor's operation, done by a team of specialists in engineering, pricing, audit, management, and plant facilities, etc. The primary objective is to identify instances of omission or commission in the management and performance of planned or existing work which could compromise attainment of realistic schedule, performance, and cost objectives. A realistic price is one which is based on an attainable cost estimate; that is, an estimate of what it should cost if the contractor operates with reasonable economy and efficiency.

SOURCE SELECTION—The process wherein the requirements, facts, recommendations, and government policy relevant to an award decision in a competitive procurement of a system/project are examined and the decision is made.

SPECIFICATION—A document intended primarily for use in procurement, which clearly and accurately describes the essential technical requirements by which it will be determined that the requirements have been met. Specifications for items and materials may also contain preservation, packaging, packing, and marking requirements.

STANDARD—An established or accepted rule, measure, or model by which the degree of satisfactoriness of a product or act is determined.

STUDIES AND ANALYSES—Critical examination and investigation of a subject, often requiring sophisticated analytical techniques to integrate a variety of factors, leading to conclusions or recommendations making substantive contributions to planning, programming and decision making. Unlike experimentally-oriented research and development activities, studies and analyses are typically "pencil and paper" efforts (often computer-assisted) which usually do not generate new scientific knowledge *per se*. Studies are designed to organize and evaluate data and information already available (or which can be inferred or extrapolated from existing data) to provide greater understanding or relevant alternative policies, systems or programs.

SUNK COST—A cost which is irrevocably committed to a project; such costs have no bearing on the results of comparative cost studies.

SURVIVABILITY—The degree to which a system is able to avoid or withstand a hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission.

SYSTEM—An assembly of procedures, processes, methods, routines, or techniques united by some form of regulated interaction to form an organized whole.

SYSTEM ACQUISITION PROCESS—A sequence of specified decision events and phases of activity directed to achievement of established program objectives in the acquisition of Defense systems and extending from approval of a mission need through successful deployment of the Defense system or termination of the program.

SYSTEM DESIGN CONCEPT—An idea expressed in terms of general performance, capabilities, and characteristics of hardware and software oriented either to operate or to be operated as an integrated whole in meeting a mission need.

SYSTEM ENGINEERING, DEFENSE—That portion of the acquisition process dealing with the transformation of an operational need into an optimal set of system performance parameters and a preferred system configuration. It includes engineering/technical management, definition of system and program, design engineering, support engineering, the integration of the engineering specialties, and other such factors that affect the development, production, deployment, operation, and disposal of the system.

SYSTEM ENGINEERING PROCESS—A logical sequence of activities and decisions transforming an operational need into a description of system performance parameters and a preferred system configuration.

TECHNICAL DATA—Recorded information, regardless of form or characteristic, of a scientific or technical nature. It may, for example, document research, experimental, developmental, or engineering work; or be usable or used to define a design or process or to procure, produce, support, maintain, or operate material. The data

may be graphic or pictorial delineations in media such as drawings or photographs; in test specifications, related performance or design-type documents; in machine forms such as punched cards, magnetic tape, computer memory printouts; or may be retained in computer memory.

TECHNICAL EVALUATION—The final sub-phase of Development Test and Evaluation II (DT-II), the purpose of which is to certify that the design meets specified requirements and is ready for Operational Evaluation (OPEVAL).

TECHNICAL SERVICES—Those services associated with the installation, operation, and maintenance of aircraft and shipboard weapons, equipment and systems and performed by in-house and contract personnel qualified and trained in engineering and technical disciplines.

TECHNOLOGICAL LIFE—The estimated number of years before technology will make the existing or proposed equipment or facilities obsolete.

TEST CRITERIA—Standards by which test results and outcome are judged.

THREAT—The sum of the potential strength, capabilities, and intentions of an enemy which can limit or negate mission accomplishment or reduce force, system, or equipment effectiveness.

THRESHOLDS—Monetary, time, or resource limitations placed on a program, to be used as guides as the program progresses and the breaching of which is cause for careful review of at least some aspects of the program.

THRESHOLDS (DOD PROGRAMMING SYSTEM)—A set of criteria which, if met or exceeded, requires the submission of a Program Change Request to the Office of the Secretary of Defense.

TOP LEVEL REQUIREMENTS (TLR)—A document promulgated and approved by the CNO which defines the operational requirements of a ship to be produced and stipulates the maximum cost and all other program constraints affecting the design and utilization of the ship. As a

minimum the TLR will state the ship's mission, operational requirements, major configuration constraints, plan for use, maintenance concepts, supply support concepts, manning limitations, minimum operational standards and maximum allowable cost.

TOP LEVEL SPECIFICATIONS (TLS)—A document promulgated by the Naval Sea Systems Command which translates the Top Level Requirements into a physical ship description thus providing a bridge between the Top Level Requirements and the ship procurement specifications.

TOTAL OBLIGATIONAL AUTHORITY (TOA)—The total financial requirements of the Five-Year Defense Program or any component thereof required to support the approved program of a given fiscal year.

TRANSPORTABILITY—The inherent capability of materiel to be moved by towing, by self-propulsion, or by carrier via railways, highways, waterways, pipelines, ocean, and airways.

UNDERWAY TRIALS (UT)—Trials and material inspection conducted underway by the Trial Board for all ships constructed in a naval shipyard or converted/modernized in a naval or private shipyard to determine suitability for delivery and whether the ship is ready for active fleet duty.

UNSOLICITED PROPOSAL—A research or development proposal which is made to the Government by a prospective contractor without

prior formal or informal solicitation from a purchasing activity.

VALUE ENGINEERING DISCIPLINE—A sequential process for systematically analyzing the functional requirements of DOD systems, equipment, facilities, procedures, and material to achieve the essential functions at the lowest total cost of effective ownership, consistent with requirements for performance, reliability, quality, maintainability, and safety.

VULNERABILITY—The characteristics of a system which causes it to suffer a definite degradation as a result of having been subjected to a certain level of effects in a man-made hostile environment.

WEAPONRY—The wherewithal to defeat naval and military targets by destructive or nondestructive means.

WORK BREAKDOWN STRUCTURE—A product-oriented family tree division of hardware, software, services and other work tasks which organizes, defines and graphically displays the product to be produced as well as the work to be accomplished to achieve the specified product.

WORK UNIT—The smallest segment into which research or technology efforts are divided for local administration or control. Each work unit has a specific objective, finite duration, and results in an end product. It is technically distinct in scope, objective, and duration from other research or technology efforts with which it may be aggregated for either financial, administrative, or contracting purposes.

GLOSSARY REFERENCE LIST

DODINST 5000.8, "Glossary of Terms Used in the Areas of Financial, Supply and Installations Management." The Glossary contains approximately 1,200 terms "for general-reference use."

JCS Pub. 1, *Department of Defense Dictionary of Military and Associated Terms*, June 1979.

APPENDIX J

NAVY SYSTEMS ACQUISITION PROCESS OUTLINE

The following pages provide, in the form of flow charts and facing-page descriptive paragraphs (step statements), an overview of the major steps in the DON's process for acquisition of systems. Variations in the process for each acquisition category are described. This process outline summarizes information presented in Section 2.5 of this Guide.

The first nine steps, presented in the first two flow charts, cover the program initiation process. The remaining steps cover the process for milestone decisions.

The flow charts and associated step statements identify officials and special groups, planning and control documents, and the review and

approval process. Sources of additional information in this guide are referenced within the step statements.

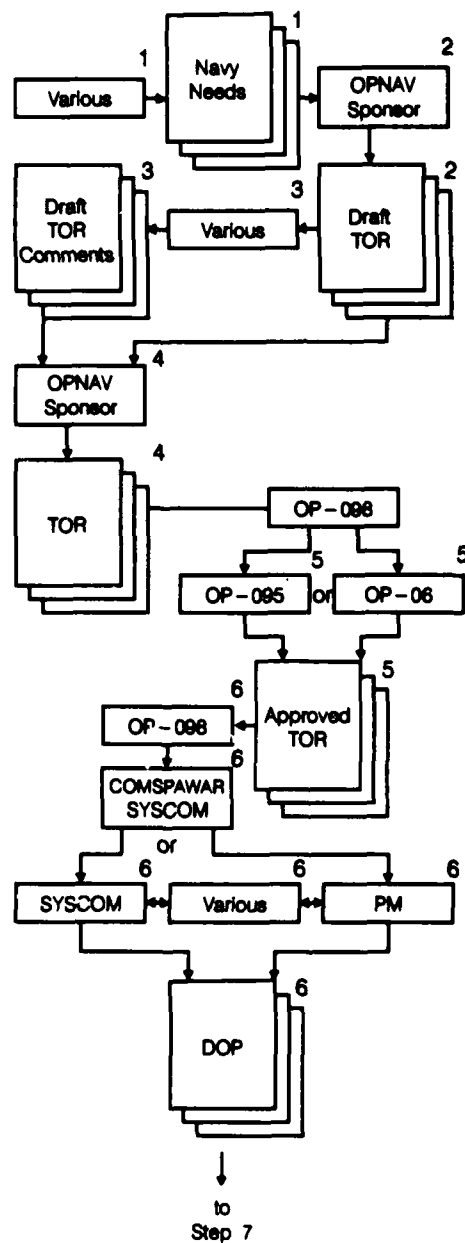
Governing directives and other sources of in-depth information are identified in "Selected References" at the end of this Appendix.

When appropriate, a "NOTE" is added to the end of a paragraph to highlight options for the action described.

The flow charts and basic step statements were originally prepared for publication in the *Navy Program Manager's Guide* which is available from CO, NAVPUBFORMCEN, 5801 Tabor Ave., Philadelphia, PA 19120.

ACQUISITION PROCESS OUTLINE

PROGRAM INITIATION



ACQUISITION PROCESS OUTLINE

PROGRAM INITIATION

1. Inputs for Navy needs may be submitted to Office of the Chief of Naval Operations (OPNAV) sponsors by Deputy Chiefs of Naval Operations/Directors of Major Staff Offices (DCNOs/DMSOs), Fleet Commanders in Chief (CINCs) or others.

2. When the need for a new system is perceived and is believed to be affordable, a draft Tentative Operational Requirement (TOR) (see 2.5.3.1) is originated by the OPNAV sponsor.

3. The draft TOR is forwarded for comment to Fleet CINCs, selected offices within OPNAV, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) and others as appropriate.

4. Based on the comments received, the OPNAV sponsor revises the draft TOR as necessary.

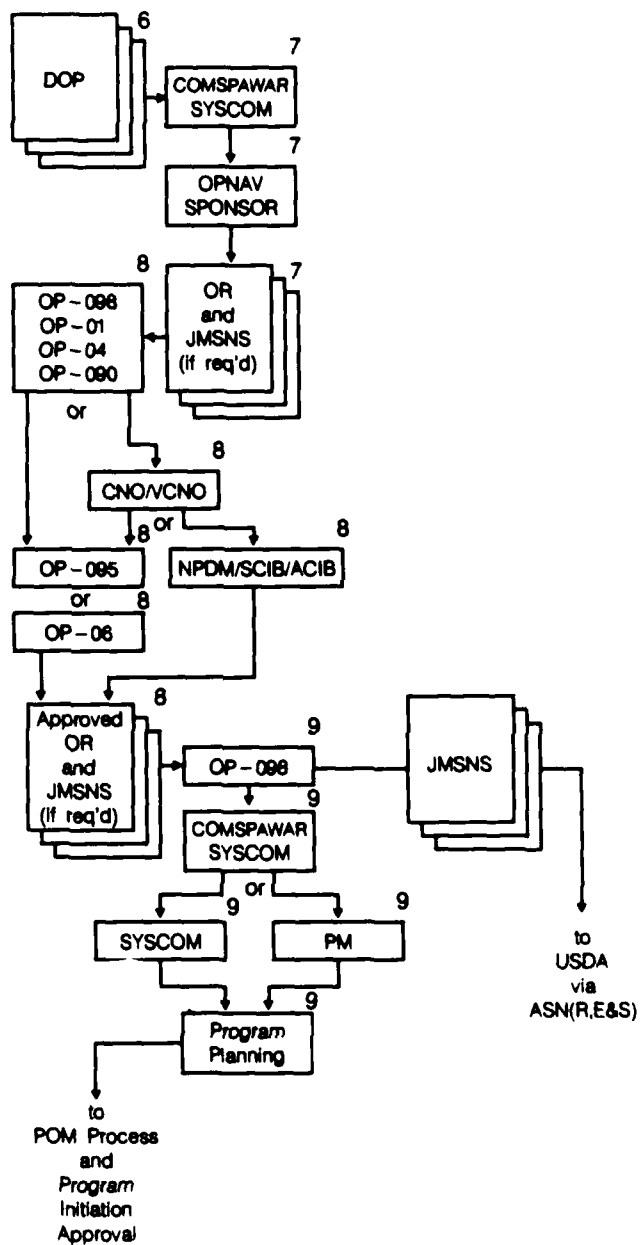
5. The TOR is submitted to the Director, Research, Development, and Acquisition (OP-098) for review. The TOR is then submitted for approval, to the Director of Naval Warfare (OP-095) or, in the case of TORs for strategic nuclear systems, to the DCNO (Plans, Policy, and Operations) (OP-06).

NOTE: TORs may be issued at any time in the PPBS cycle. A rule of thumb, for planning purposes, is that the TOR should be issued about a year in advance of the Program Objectives Memorandum (POM) (see 3.3.10) submission which will contain the initial funding.

6. Once approved by OP-095/06, the TOR is promulgated by OP-98 and forwarded to Commander Space and Naval Warfare Systems Command (COMSPAWARSSYSCOM). COMSPAWARSSYSCOM, reviews the TOR and identifies Warfare Systems Engineer (WSE) and Warfare Systems Architecture (WSA) standards to be used in formulation of the Development Options Paper (DOP). COMSPAWARSSYSCOM forwards the TOR to the appropriate SYSCOM commander or designated Program Manager (PM), with any required guidance. The SYSCOM Commander or PM, on receipt of the TOR, explores the options, interacting with Navy laboratories, industry, and COMOPTEVFOR as appropriate, to produce a DOP (see 2.5.3.2), which describes a range of possible systems covering a spectrum of capabilities.

ACQUISITION PROCESS OUTLINE

PROGRAM INITIATION



ACQUISITION PROCESS OUTLINE

PROGRAM INITIATION

7. The DOP is transmitted to the OPNAV sponsor via COMSPAWARSSYSCOM with copies to selected OPNAV offices, COMOPTEVFOR and others as appropriate. The OPNAV sponsor selects the alternative which best matches the desired capabilities with affordability considerations. Based on this selection the OPNAV sponsor originates an Operational Requirement (OR) (see 2.5.3.3) defining the major characteristics of the selected system. For potential DOD major programs (ACAT I), a Justification for a Major System New Start (JMSNS) (see 2.5.3.5) is prepared in addition to an OR.

8. The OR/JMSNS is routed, via OP-098 and DCNO (Manpower, Personnel and Training) (OP-01), DCNO (Logistics) (OP-04) and the Plans and Programs Office (OP-090), to OP-095 for review and approval. High-cost or controversial programs must be concurred in by Chief of Naval Operations/Vice Chief of Naval Operations (CNO/VCNO) prior to approval of the OR/JMSNS. OP-090 decides whether this approval is accomplished by the Navy Program Decision Meeting/Ship Characteristics and Improvement Board/Aircraft Characteristics and Improvement Board (NPDM/SCIB/ACIB) or directly by OP-095. For strategic nuclear systems, the OR/JMSNS is reviewed and approved by OP-06.

9. Once approved, the OR is promulgated by OP-098 to SPAWARSSYSCOM for review and application of interface design guidance as appropriate. It is then forwarded to the cognizant SYSCOM commander or PM, who initiates planning for the program described in the OR. The JMSNS, if required, is forwarded by OP-098, via ASN(R,E&S), to the Under Secretary of Defense (Acquisition) (USDA), normally with the POM submission.

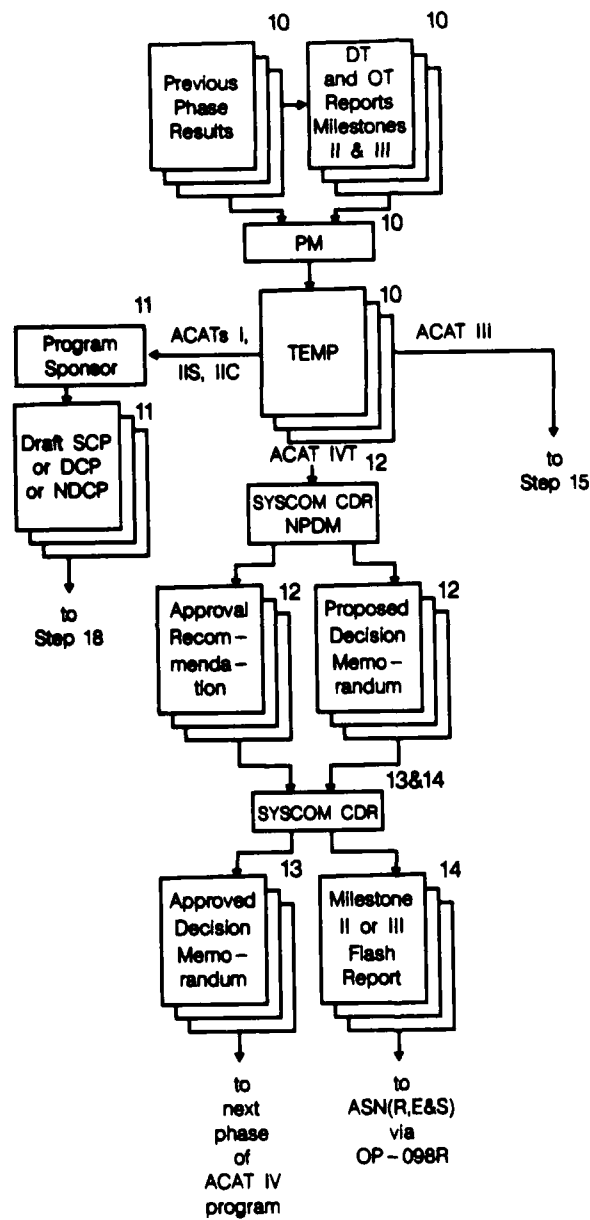
NOTE: ORs may be issued at any time. However, if a new start is to be included in the POM submission in May, the OR must be promulgated by the preceding 1 January. This allows about two months for OPNAV and Secretary of the Navy (SECNAV) review of the requirement and the proposed program prior to the final POM decision on funding.

NOTE: When a Navy POM with a JMSNS for a new major program is submitted to the SECDEF for approval, the SECDEF denotes his approval in the Program Decision Memorandum (PDM) (see 3.3.12). When a program represented by a JMSNS is modified by the SECDEF, the changes are documented in a SECDEF Decision Memorandum (SDDM) (see 2.5.7.1).

NOTE: If, subsequent to approval of an OR, the resultant program is not funded in the first or second year of the next POM, the OR is canceled by OP-098.

ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III



ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III

10. Prior to Milestone I, a Test and Evaluation Master Plan (TEMP) (see 2.5.5.5, 7.5.3) is prepared by the PM. For subsequent milestones, the TEMP is updated based on the results of the previous phase activities. The TEMP is the milestone review document for ACAT III and IV programs. It is also required for ACAT I, IIS, and IIC milestone reviews.

NOTE: ACAT III and ACAT IV programs do not normally have a Milestone I. However, a TEMP is required at the approximate time when Milestone I would normally occur.

NOTE: At Milestone III, all programs require the preparation of an Approval for Production action sheet for the milestone review.

11. For ACAT I, IIS and IIC programs, the PM forwards the TEMP to the Program Sponsor who also prepares, for ACAT I programs, a System Concept Paper (SCP) (see 2.5.5.1), at Milestone I or, for Milestone II and III, a Decision Coordinating Paper (DCP) (see 2.5.5.2). For an ACAT IIS and ACAT IIC, the Program Sponsor prepares a Navy Decision Coordinating Paper (NDCP) (see 2.5.5.4) for all milestones.

NOTE: For ACAT I programs, at Milestones II and III, SECDEF may require some elements of the Integrated Program Summary (IPS) (see 2.5.5.3) as backup for the DCP.

12. For ACAT IV programs, for which the SYSCOM CDR is the program decision authority (PDA), the TEMP and test documentation is reviewed at a SYSCOM CDR's Navy Program Decision Meeting (NPDM) (see 2.5.6.3). If the NPDM is in agreement that the program is ready to enter the next phase, it so recommends and has a proposed SYSCOM CDR's decision memorandum prepared.

13. The NPDM's recommendation and proposed decision memorandum is submitted to the SYSCOM CDR for review and approval. For ACAT IV programs, approval by the SYSCOM CDR provides the PM with the necessary go-ahead to proceed with the next acquisition phase.

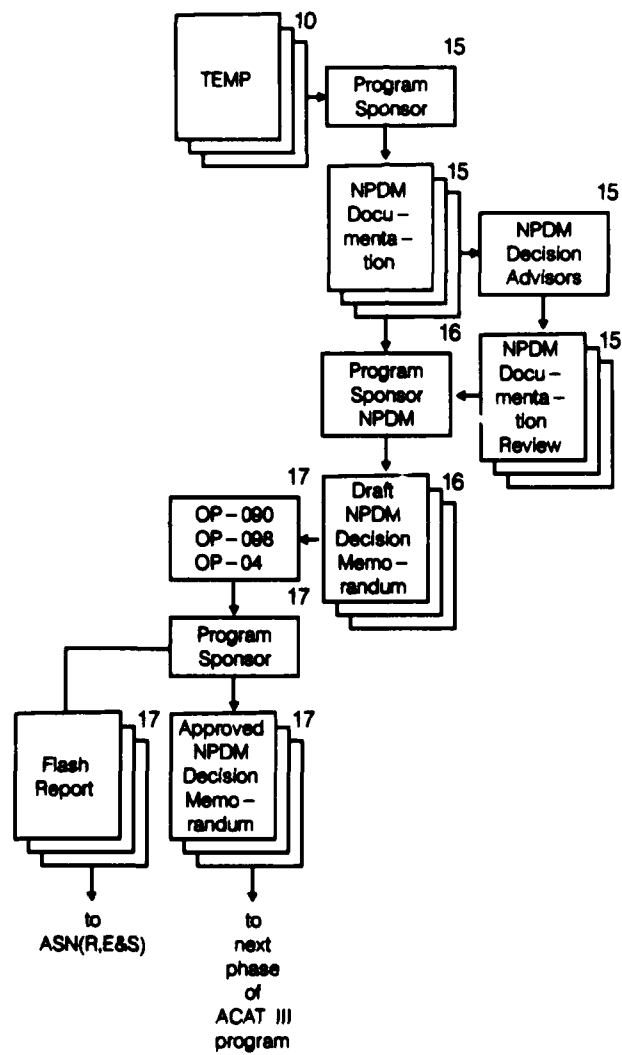
NOTE: For ACAT IVT programs, if COMOPTEVFOR and the SYSCOM disagree, resolution will be made by OP-098 in consultation with the OPNAV sponsor.

14. After a Milestone II approval by the SYSCOM CDR, a Flash Report (see 2.5.5.6) is prepared. The Flash Report along with program documentation, is forwarded to OP-098R within five working days of the NPDM for forwarding to ASN(R,E&S). Secretariat review is assumed to be complete and concurrence given unless otherwise noted within ten working days following delivery of the flash report by OP-098.

NOTE: At Milestone III, flash reports are required only for those programs which the SECNAV has designated as SECNAV special interest programs.

ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III



ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III

15. For ACAT III programs, the Program Sponsor makes available prior to the Sponsor NPDM, to Sponsor NPDM decision advisors the following: the TEMP, Development and Operational test reports and copies of the PM's and COMOPTEVFOR's briefings prepared for the NPDM for review.

NOTE: The sponsor NPDM decision advisors are flag/SES representatives of OP-090, OP-095, OP-098, OP-01, OP-04, COMOPTEVFOR and the appropriate SYSCOM.

16. At the sponsor NPDM, presentations are normally made by the program sponsor, the PM and COMOPTEVFOR. At the conclusion of the NPDM, the Program Sponsor announces his intended decision. If no major disagreements arise, the NPDM decision document is drafted by the Program Sponsor.

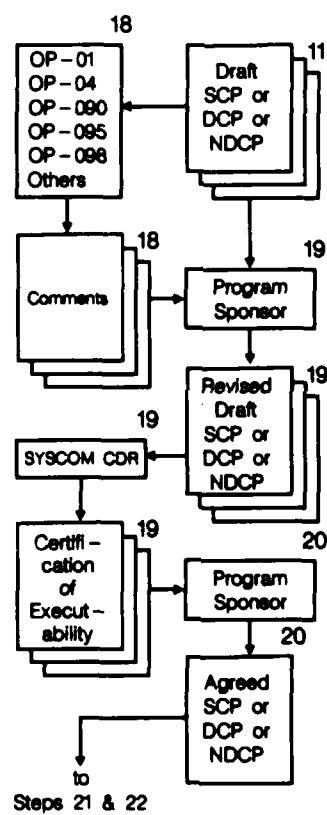
NOTE: If there are major disagreements, the VCNO will automatically become the decision-maker and will sign the NPDM decision memorandum.

17. The draft decision document is reviewed by OP-090, OP-098 and OP-04. If all are in agreement, the Program Sponsor promulgates the decision document, allowing the ACAT III program to proceed into the next acquisition phase. As with ACAT IV programs, the Program Sponsor transmits a flash report to the ASN(RE&S) at Milestones II and III.

NOTE: For SECNAV special interest programs, OP-098 will secure SECNAV approval of the draft decision document.

ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III



ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III

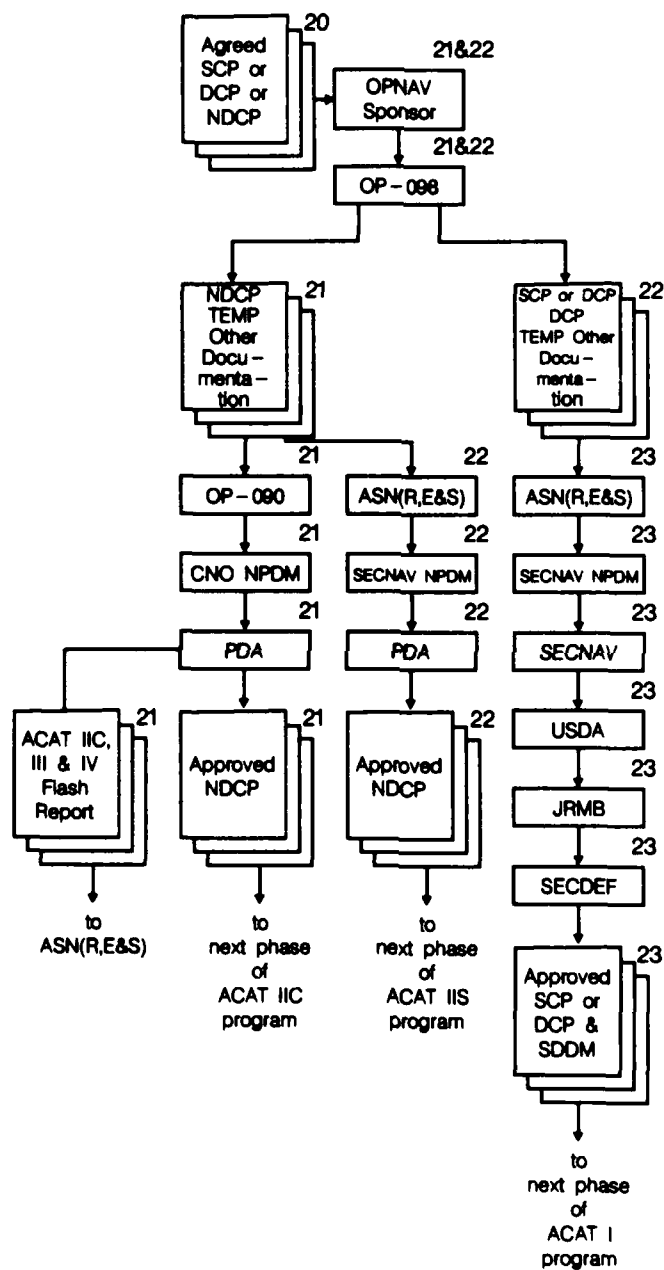
18. For ACAT I, IIS, and IIC programs, the Program Sponsor's draft SCP/DCP/NDCP is forwarded to appropriate OPNAV offices for review and comments. Responses are mandatory from OP-01, OP-04, OP-090, OP-095, and OP-098.

19. Once various comments are resolved, the Program Sponsor forwards the draft SCP/DCP/NDCP to the SYSCOM CDR for a "Certification of Executability" signature. The SYSCOM CDR signs this statement when the commander agrees that the program can be executed as described within the resources anticipated and displayed on the resource summary page of the SCP/DCP/NDCP.

20. Following the SYSCOM CDR's signature, the SCP/DCP/NDCP is returned to the Program Sponsor for signature. The Program Sponsor's signature on the executability page indicates acceptance of the contract with the SYSCOM CDR and willingness to support the agreed upon program within the limits imposed by the PPBS.

ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III



ACQUISITION PROCESS OUTLINE

MILESTONES I, II & III

21. After the Program Sponsor's signature, the SCP/DCP/NDCP, TEMP and a summary of the comments received and their resolution is delivered to OP-098R for approval processing. For ACAT IIC programs, OP-098 forwards the NDCP, TEMP, etc., to OP-090. OP-090 is responsible for calling CNO NPDM and determining whether the appropriate PDA approval signature should be OP-090, the VCNO or the CNO. When approved, the NDCP is returned to OP-098 for promulgation and the ACAT IIC may proceed into the next acquisition phase. As with ACAT IV programs, the PDA issues a flash report at Milestone II and Milestone III if required.

22. For ACAT I and IIS programs, OP-098 forwards the SCP/DCP/NDCP, TEMP, etc., to ASN(R,E&S). ASN(R,E&S) is responsible for calling a SECNAV NPDM and determining whether the appropriate PDA approval signature should be ASN(R,E&S) or if it should be forwarded to the SECNAV for approval. When the NDCP has been approved it is returned to OP-098 for promulgation and the ACAT IIS may proceed into the next acquisition phase.

23. For ACAT I programs, after the SCP or DCP has been approved within the SECNAV's office, the SCP or DCP, TEMP, etc., are forwarded to the office of the Under Secretary of Defense (Acquisition) for review by the Joint Requirements and Management Board (JRMB) (see E9.2). Once the JRMB has met and a SDDM has been issued, OP-098 will promulgate the SCP or DCP and the ACAT I may proceed into the next acquisition phase.

NOTE: In the case where the SDDM requires revision of the SCP or DCP, it is revised by the Program Sponsor, to reflect the decisions contained in the SDDM, after which it is promulgated by OP-098.

SELECTED REFERENCES ON THE SYSTEMS ACQUISITION PROCESS

Department of the Navy Programming Manual provides in-depth information on the PPBS process in general and the POM process in particular.

DODINST 7045.7, "Implementation of the Planning, Programming, and Budgeting System," provides official guidance on the POM process.

DODDIR 5000.1, "Major System Acquisitions," establishes fundamental overall policy for systems development and acquisition. The management principles in the directive are applicable to all programs.

DODINST 5000.2, "Major System Acquisition Procedures."

DODDIR 5000.3, "Test and Evaluation."

SECNAVINST 5000.1, "System Acquisition."

SECNAVINST 5420.188, "Navy Program Decision Meetings (NPDM)."

OPNAVINST 5000.42, "RDT&E/Acquisition Procedures."

For specific information on aspects of the process, consult the directives referenced following the various portions of Section 2.5.

MASTER REFERENCE LIST

This master reference list provides a consolidated listing of directives and instructions, showing modifications and date of issue, used in preparation of this edition of the **Department of the Navy RDT&E Management Guide**. Numbers in parentheses following the citation show specific sections and paragraphs affected by that directive.

DOD

DODDIR 3200.11 of 9/29/80 (OPNAV 3900.25), MAJOR RANGE AND TEST FACILITY BASE. (7.3.2; 7.3.3; 7.3.5; G)

DODDIR 3200.12 of 2/15/83 (SECNAV 3900.43), DOD SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM. (1.5.3; D; D1; D3)

DODMAN 3200.12-M-1 of 8/84, RESEARCH AND TECHNOLOGY WORK UNIT INFORMATION SYSTEM MANUAL. (C10)

DODREG 3200.12-R-1 of 8/83, RESEARCH AND TECHNOLOGY WORK UNIT INFORMATION SYSTEM REGULATION. (D; D3.1.1)

DODREG 3200.12-R-2 of 1/85, CENTERS FOR ANALYSIS OF SCIENTIFIC AND TECHNICAL INFORMATION REGULATION. (D; D4)

DODDIR 3201.1 of 3/9/81 (SECNAV 3910.3), MANAGEMENT OF DOD RESEARCH AND DEVELOPMENT LABORATORIES. (F)

DODINST 3201.3 of 3/31/81 (SECNAV 3910.3), DOD RESEARCH AND DEVELOPMENT LABORATORIES. (F)

DODINST 3204.1 of 12/1/83 (SECNAV 3900.40), INDEPENDENT RESEARCH AND DEVELOPMENT. (6.5.5.3; D; D3.1.2)

DODDIR 3210.1 of 10/26/61 (ONR 3900.30),

ADMINISTRATION AND SUPPORT OF BASIC RESEARCH BY THE DOD. (2.3)

DODDIR 3210.2 of 4/22/77, RESEARCH GRANTS AND TITLE TO EQUIPMENT PURCHASED UNDER GRANTS. (6.5.6.2)

DODINST 4105.59 of 10/24/83 (NAVMAT 4330.29), DEPARTMENT OF DEFENSE PLANT COGNIZANCE PROGRAM. (6.7.5)

DODDIR 4105.62 of 9/9/85, SELECTION OF CONTRACTUAL SOURCES FOR MAJOR DEFENSE SYSTEMS. (6; 6.6.4; 6.6.5)

DODINST 4105.64 of 5/8/70, TECHNICAL REPRESENTATION AT CONTRACTORS' FACILITIES. (6.7.5)

DODDIR 4205.2 of 1/27/86, DOD CONTRACTED ADVISORY ASSISTANCE SERVICES (CAAS). (2.2.4.1)

DODINST 4245.3 of 4/6/83, DESIGN TO COST. (2.7)

DODDIR 5000.1 of 3/12/86, MAJOR SYSTEM ACQUISITIONS. (1.2.4; 1.6; 2; 2.2.10; 2.5; 2.5.1.2; 2.5.3; 2.5.3.5; 2.5.4; 2.5.5.1; 2.5.5.2; 3.5.5.3; 2.5.6.2; 2.5.7.1; 2.6; 2.7; 6.1.2; 7.1.3; 7.1.4; 7.2.9; 7.4.2; E1.7; E9.2; J)

DODINST 5000.2 of 3/12/86, MAJOR SYSTEM ACQUISITION PROCEDURES. (1.2.2; 2; 2.2.3; 2.2.10; 2.5; 2.5.1.1; 2.5.1.2; 2.5.1.3; 2.5.3; 2.5.3.5; 2.5.5.1; 2.5.5.2; 2.5.5.3; 2.5.6.2; 2.5.7.1; 7.1.3; 7.5; E9.2; J)

DODDIR 5000.3 of 3/12/86, TEST AND EVALUATION. (1.2.3.2; 2.5.1.4; 2.5.5.5; 7; 7.1.3; 7.1.6; 7.2.1.2; 7.4; 7.4.2; 7.4.4; 7.4.4.4; 7.5; 7.8; G2.1; J)

DODDIR 5000.4 of 10/30/80 (SECNAV 7000.19), OSD COST ANALYSIS IMPROVEMENT GROUP. (2.7)

DODDIR 5000.23 of 11/26/74, SYSTEM ACQUISITION MANAGEMENT CAREERS. (1.6.3)

DODDIR 5000.39 of 1/17/83 (SECNAV 5000.39), ACQUISITION AND MANAGEMENT OF INTEGRATED LOGISTIC SUPPORT FOR SYSTEMS AND EQUIPMENT. (2.6)

DODDIR 5025.1 of 10/16/80, DEPARTMENT OF DEFENSE DIRECTIVE SYSTEM. (B4)

DODDIR 5100.1 of 1/10/86 (SECNAV 5410.85), FUNCTIONS OF THE DEPARTMENT OF DEFENSE AND ITS MAJOR COMPONENTS. (1; 1.1; 1.2.1; 1.3; 1.4.1; 7.2.2)

DODDIR 5100.23 of 5/17/67 (OPNAV 5410.17), ADMINISTRATIVE ARRANGEMENTS FOR THE NATIONAL SECURITY AGENCY. (E1.8.6)

DODDIR 5105.19 of 8/10/78 (OPNAV 5410.12); DEFENSE COMMUNICATIONS AGENCY (DCA). (E1.8.2)

DODDIR 5105.21 of 4/19/85, DEFENSE INTELLIGENCE AGENCY. (E1.8.4)

DODDIR 5105.22 of 8/15/86, DEFENSE LOGISTICS AGENCY (DLA). (E1.8.5)

DODDIR 5105.31 of 11/3/71, DEFENSE NUCLEAR AGENCY (DNA) (C). (E1.8.1)

DODDIR 5105.36 of 6/8/78, DEFENSE CONTRACT AUDIT AGENCY. (E1.8.3)

DODDIR 5105.41 of 9/30/86, DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA). (E1.1.1)

DODDIR 5111.1 of 9/27/85, UNDER SECRETARY OF DEFENSE FOR POLICY. (1.2.2; E1.2)

DODDIR 5118.3 of 7/11/72, ASSISTANT SECRETARY OF DEFENSE (Comptroller). (E1.4)

DODDIR 5129.1 of 11/19/85, UNDER SECRE-

TARY OF DEFENSE FOR RESEARCH AND ENGINEERING. (1.2.3; E1.1)

DODDIR 5129.22 of 6/26/78, DEFENSE SCIENCE BOARD. (E9.1)

DODDIR 5141.1 of 9/22/82, DIRECTOR, PROGRAM ANALYSIS AND EVALUATION. (E1.6)

DODDIR 5141.2 of 4/2/84, DIRECTOR OF OPERATIONAL TEST AND EVALUATION. (1.2.3.3; 7.2.1.2; G2.2)

DODDIR 5230.24 of 11/20/84, DISTRIBUTION STATEMENTS ON TECHNICAL DOCUMENTS. (6.7.2)

DODDIR 5400.4 of 1/30/78, PROVISION OF INFORMATION TO CONGRESS. (4.8)

DODDIR 5545.2 of 8/20/79, DOD POLICY FOR CONGRESSIONAL AUTHORIZATION AND APPROPRIATION ACTIONS. (5.1.4)

DODINST 5545.3 of 7/5/79 (NAVCOMPTINST 7130.25), DOD PROCEDURES FOR CONGRESSIONAL AUTHORIZATION AND APPROPRIATION ACTIONS. (5.1.4)

DODINST 7000.2 of 6/10/77 (SECNAV 7000.17), PERFORMANCE MEASUREMENT FOR SELECTED ACQUISITIONS. (6.7.1)

DODINST 7000.3 of 4/17/86 (SECNAV 7700.5), SELECTED ACQUISITION REPORTS. (2.7; 6; 6.7.6; C2.1)

DODINST 7000.10 of 12/3/79 (SECNAV 7000.15), CONTRACT COST PERFORMANCE FUNDS STATUS AND COST/SCHEDULE STATUS REPORTS. (6.7.4.1; 6.7.4.3)

DODINST 7000.11 of 3/27/84 (SECNAV 7000.20), CONTRACTOR COST DATA REPORTING. (6.7.4.2)

DODINST 7040.4 of 3/5/79 (SECNAV 7045.9), MILITARY CONSTRUCTION AUTHORIZATION AND APPROPRIATION. (2.6.2)

DODINST 7040.5 of 9/1/66 (SECNAV 7040.6),

DEFINITIONS OF EXPENSE AND INVESTMENT COSTS. (5.3.3)

DODINST 7041.3 of 10/18/72 (SECNAV 7000.14), ECONOMIC ANALYSIS AND PROGRAM EVALUATION FOR RESOURCE MANAGEMENT. (2.7)

DODINST 7045.7 of 5/23/84, IMPLEMENTATION OF THE PLANNING, PROGRAMMING, AND BUDGETING SYSTEM (PPBS). (3; 3.3; 3.4; 4.2; 4.4; 4.4.4.2; J)

DODINST 7110.1 of 10/30/80, DOD BUDGET GUIDANCE. (5.1.1)

DODDIR 7200.1 of 5/7/84, ADMINISTRATIVE CONTROL OF APPROPRIATIONS. (5; 5.1.1; 5.2)

DODINST 7220.1 of 5/4/71, REGULATIONS GOVERNING THE USE OF PROJECT ORDERS. (6.2.4)

DODINST 7220.24 of 9/18/69, ACCOUNTING FOR RESEARCH AND DEVELOPMENT. (5.3; 5.3.5)

DODDIR 7250.5 of 1/9/80 (NAVCOMPTINST 7133.1), REPROGRAMMING OF APPROPRIATED FUNDS. (5; 5.5)

DODINST 7250.10 of 1/10/80 (NAVCOMPTINST 7133.1), IMPLEMENTATION OF REPROGRAMMING OF APPROPRIATED FUNDS. (5.5)

DODDIR 7410.4 of 4/16/82, INDUSTRIAL FUNDS OPERATIONS. (5; 5.3.4.1)

DODINST 7410.5 of 1/3/75, FINANCIAL REPORTS FOR DEPARTMENT OF DEFENSE INDUSTRIAL FUNDS. (5.3.4.1)

DODDIR 7600.2 of 1/10/85, AUDIT POLICIES. (5.6)

DODINST 7600.3 of 7/18/86, INTERNAL AUDIT IN THE DEPARTMENT OF DEFENSE. (5.6)

DODDIR 7650.2 of 7/19/85, GENERAL

ACCOUNTING OFFICE AUDITS AND REPORTS. (5.6)

DODDIR 7750.5 of 8/7/86 (OPNAV 5214.7), MANAGEMENT AND CONTROL OF INFORMATION REQUIREMENTS. (6.7.1)

INSURV

INSURVINST 13100.1C of 9/30/83, POLICIES, RESPONSIBILITIES, AND PROCEDURES FOR INSURV AIRCRAFT TRIALS. (7.4.3)

MARINE CORPS

MCO 3900.4C of 9/10/84, MARINE CORPS PROGRAM INITIATION AND OPERATIONAL REQUIREMENTS DOCUMENTS. (2.5.9)

MCO 3900.11C of 6/15/83, MARINE CORPS RESEARCH, DEVELOPMENT, TEST AND EVALUATION (RDT&E) WORK DIRECTIVES AND ASSOCIATED DOCUMENTS. (6.2.4)

MCO 3900.12A of 6/11/82, MARINE CORPS EXPLORATORY DEVELOPMENT PROGRAM. (2.4)

MCO 3960.2 of 3/29/78, MARINE CORPS OPERATIONAL TEST AND EVALUATION ACTIVITY (MCOTEA); ESTABLISHMENT OF. (7.2.9.1; G4.2)

MCO P5000.10A of 1/27/81, SYSTEMS ACQUISITION MANAGEMENT MANUAL. (1.7.11; 2; 2.5.6.7; 2.5.9; 6.8; 7.2.9.2; E6; E9.4)

MCO 5000.11A of 7/2/79, TESTING AND EVALUATION OF SYSTEMS AND EQUIPMENT FOR THE MARINE CORPS. (6.2.4; 7.2.9.2)

MCO 5000.15 of 2/19/85, MARINE CORPS SYSTEMS ACQUISITION MANAGEMENT POLICY. (6.8)

NAVCOMPT

NAVCOMPTINST 7044.5E of 9/1/81, DOD IN-HOUSE RDT&E ANNUAL ACTIVITIES REPORT. (F)

NAVCOMPTINST 7044.8 of 6/25/74, REIMBURSABLE ORDERS CITING THE RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY (RDT&E,N) APPROPRIATION. (5.3)

NAVCOMPTINST 7102.2 of 4/27/83, GUIDANCE FOR THE PREPARATION, SUBMISSION AND REVIEW OF DEPARTMENT OF THE NAVY (DON) BUDGET ESTIMATES. (Promulgates *DON Budget Guidance Manual*. Distribution limited primarily to major claimants for funds.) (2.2.7; 4; 4.3.2; 4.4.4.1; 5.3.3; C8)

NAVCOMPTINST 7121.3D of 10/6/67, DEPARTMENT OF THE NAVY ANNUAL BUDGET HEARINGS BEFORE THE CONGRESSIONAL APPROPRIATIONS COMMITTEES; INFORMATION FOR WITNESSES. (4; 4.8)

NAVCOMPTINST 7130.25D of 11/9/79, PROCEDURES FOR THE ANNUAL REVIEW AND IMPLEMENTATION OF CONGRESSIONAL ACTIONS OF AUTHORIZATION AND APPROPRIATION ACTS AFFECTING DOD AND RELATED CONGRESSIONAL REPORTS. (5.1.4)

NAVCOMPTINST 7133.1C of 5/8/80, PROCEDURES AND REPORTING REQUIREMENTS RELATED TO THE REPROGRAMMING OF APPROPRIATED FUNDS; IMPLEMENTATION OF. (5.5)

NAVCOMPTINST 7331.1E of 8/1/78, NAVY AND MARINE CORPS INDUSTRIAL FUND QUARTERLY REPORTS; REQUIREMENT FOR. (5.3.4.1; 5.5)

NAVMAT

NAVMATINST 3000.1A of 4/22/77, RELIABILITY OF NAVAL MATERIAL. (7.7) (SPAWAR)*

* DENOTES COMMAND OR OFFICE ASSIGNED COGNIZANCE.

NAVMATINST 3900.4C of 4/6/83, AD-

VANCED PLANNING BRIEFINGS FOR INDUSTRY (APBI). (D; D7) (OCNR)

NAVMATINST 3900.14 of 8/6/76, NAVY/INDUSTRY COOPERATIVE RESEARCH AND DEVELOPMENT PROGRAM (NICRAD). (D; D6) (OCNR)

NAVMATINST 3900.15 of 5/5/77, CERTIFICATION AND REGISTRATION FOR ACCESS TO DOD SCIENTIFIC AND TECHNICAL INFORMATION. (D; D3.3) (OCNR)

NAVMATINST 3910.16A of 2/29/72, NAVAL MATERIAL COMMAND DEVELOPMENT SUPPORT FOR THE MARINE CORPS. (6.8) (OCNR)

NAVMATINST 3910.20A of 6/15/81, MANAGEMENT OF THE NAVY EXPLORATORY DEVELOPMENT PROGRAM. (2; 2.4; C4; E4.2.6.1) (OCNR)

NAVMATINST 3920.3C of 7/27/83, IN-HOUSE LABORATORY INDEPENDENT RESEARCH (IR) AND INDEPENDENT EXPLORATORY DEVELOPMENT (IED) PROGRAMS. (6; 6.2.6) (SPAWAR)

NAVMATINST 3960.6B of 2/9/81, TEST AND EVALUATION. (7; 7.3.2; 7.5; G) (OPNAV)

NAVMATINST 3960.7A of 4/6/77, TEST AND EVALUATION OF SHIP ACQUISITION. (7; 7.8) (NAVSEA)

NAVMATINST 3960.8 of 9/1/76, LAND-BASED TEST SITE (LBTS) SELECTION POLICY. (7.3.4; 7.8; G) (OPNAV)

NAVMATINST 4000.20B of 6/27/75, INTEGRATED LOGISTIC SUPPORT PLANNING POLICY. (2.6; 7.7) (NAVAIR)

NAVMATINST 4200.49 of 2/28/77, SELECTION OF CONTRACTUAL SOURCES FOR MAJOR DEFENSE SYSTEMS. (6; 6.6.4; 6.6.5) (SECRETARIAT)

NAVMATINST 5000.19E of 3/23/83, ACQUISITION PROGRAM REVIEW. (2.5; 2.5.1.6; 2.5.6.6; 7.1.7; E9.8; J) (OPNAV)

NAVMATINST 5000.21A of 1/11/80, CHARTERS FOR DESIGNATED PROJECTS; GUIDANCE CONCERNING. (1.6.2; 1.7.8) (SECRETARIAT)

NAVMATINST 5210.4 of 8/6/84, ACQUISITION PROGRAM DOCUMENTATION. (2.5; J) (OPNAV)

NAVMATINST 5430.59 of 2/6/78, JOINT CRUISE MISSILE PROJECT; DESIGNATION OF. (E4.3.2) (NAVAIR)

NAVMATINST 5430.62 of 6/24/81, THEATER NUCLEAR WARFARE (TNW) PROJECT; DESIGNATION OF. (E4.3.5) (NAVSEA)

NAVMATINST 5450.27C of 8/1/83, CNM-COMMANDED RESEARCH AND DEVELOPMENT CENTERS; MISSIONS AND FUNCTIONS OF. (1.8; 6; 6.2.1; F; F3; G; G5) (SPAWAR)

NAVMATINST 5700.2A of 12/20/79, MILITARY-CIVILIAN TECHNOLOGY TRANSFER AND COOPERATIVE DEVELOPMENT. (2.2.9.5) (OCNR)

NAVMEDCOM

NAVMEDCOMINST 5430.1A of 6/3/86, NAVAL MEDICAL COMMAND ORGANIZATION MANUAL. (E8)

NAVMEDCOMINST 5450.14 of 5/16/83, NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND, BETHESDA, MARYLAND; MISSION AND FUNCTIONS OF. (E8)

ONR

ONRINST 3900.30 of 6/5/70, ADMINISTRATION AND SUPPORT OF BASIC RESEARCH WITHIN THE DEPARTMENT OF THE NAVY. (2.3)

ONRINST 3910.2D of 1/13/77, NAVAL RESEARCH REQUIREMENTS AND NAVAL

RESEARCH PROGRAM STRUCTURE. (2; 2.3; 2.3.3; C3)

Draft OCNRINST 3910.3, EXPLORATORY DEVELOPMENT PROGRAM POLICIES, PROCEDURES, AND RESPONSIBILITIES. (1.4.4; 2.4; C4; E7) (To supersede NAVMATINST 3910.20A)

OCNRINST 5430.1 of 6/3/86, OFFICE OF THE CHIEF OF NAVAL RESEARCH ORGANIZATION MANUAL. (E7)

OPNAV

OPNAVINST 1040.9 of 4/20/85, MATERIEL PROFESSIONAL (MP) PROGRAM. (1.6.4)

OPNAVINST 1211.8A of 2/9/80, MANPOWER POLICY IN THE WEAPON SYSTEMS ACQUISITION MANAGEMENT FIELD. (1.6.3)

OPNAVINST 1500.8M of 1/17/85, NAVY TRAINING PLANNING PROCESS. (2.6.3; 7.5.3)

OPNAVINST 3120.28A of 8/5/76, CERTIFICATION OF AVIATION FACILITIES IN NAVAL SHIPS OPERATING AIRCRAFT. (7.8.4)

OPNAVINST 3811.1A of 8/30/78, THREAT SUPPORT TO WEAPON SYSTEMS SELECTION AND PLANNING. (2.2.3)

OPNAVINST 3900.22A of 5/31/74, RAPID DEVELOPMENT CAPABILITY FOR WARFARE SYSTEMS. (6.3.8)

OPNAVINST 3900.25B of 6/19/81, MAJOR RANGE AND TEST FACILITY BASE. (7.3.2; 7.3.3; 7.3.5)

OPNAVINST 3910.19B of 9/17/79, RELEASE OF RESEARCH AND DEVELOPMENT PLANNING AND REQUIREMENTS DOCUMENTS. (D; D5)

OPNAVINST 3960.10B of 8/22/83, TEST AND EVALUATION. (2.5.1.4; 2.5.5.5; 7; 7.1.3; 7.1.6; 7.2.3; 7.2.4; 7.2.5; 7.2.7; 7.2.8; 7.3.4; 7.3.7; 7.4; 7.4.2; 7.4.3; 7.4.4.4; 7.5; 7.5.3; 7.8; G)

OPNAVINST 4700.8G of 11/23/82, TRIALS, ACCEPTANCE, COMMISSIONING, FITTING OUT, SHAKEDOWN AND POST SHAKEDOWN AVAILABILITY OF U.S. NAVAL SHIPS UNDERGOING CONSTRUCTION/CONVERSION/MODERNIZATION. (7;7.8)

OPNAVINST 5000.37A of 4/20/79, THE MANAGEMENT AND CONDUCT OF STUDIES AND ANALYSES. (2.2.4.1)

OPNAVINST 5000.42C of 5/10/86, RDT&E/ACQUISITION PROCEDURES. (2; 2.5; 2.5.1.1; 2.5.1.2; 2.5.1.3; 2.5.1.6; 2.5.2; 2.5.3; 2.5.4; 2.5.6.5; 2.5.7.3; 7.1.3; 7.1.7; C5.1; J)

OPNAVINST 5000.49 of 10/22/82, INTEGRATED LOGISTIC SUPPORT (ILS) IN THE ACQUISITION PROCESS. (7.7)

OPNAVINST 5214.7 of 2/25/83, DEPARTMENT OF THE NAVY REPORTS MANAGEMENT PROGRAM. (6.7.1)

OPNAVINST 5410.12D of 10/13/78, DEFENSE COMMUNICATIONS AGENCY (DCA). (E1.8.2)

OPNAVINST 5420.2N of 8/7/84, CHIEF OF NAVAL OPERATIONS EXECUTIVE BOARD (CEB). (2.5.6.4; E9.5)

OPNAVINST 5420.70A of 6/20/86, MISSION, ORGANIZATION AND FUNCTIONS OF THE BOARD OF INSPECTION AND SURVEY. (7.2.4; 7.4.3; G3.1)

OPNAVINST 5430.48B of 9/6/84, OFFICE OF CHIEF OF NAVAL OPERATIONS (OPNAV) ORGANIZATION MANUAL. (1.4.5; 7.2.3; 7.4.3; G2.3)

OPNAVINST 5440.47F of 5/21/84, MISSION AND FUNCTIONS OF OPERATIONAL TEST AND EVALUATION FORCE (OPTEVFOR). (7.2.5; G3.2)

OPNAVINST 5450.165B of 6/27/83, COMMANDER NAVAL OCEANOGRAPHIC COMMAND, MISSION AND FUNCTIONS OF. (E3.9.2)

OPNAVINST 5450.176A of 7/13/79, CHIEF OF NAVAL MATERIAL, MISSION AND FUNCTIONS OF. (1.4.7; E4)

OPNAVINST 5500.33B of 1/29/74, NICRAD (DEPARTMENT OF THE NAVY/INDUSTRY COOPERATIVE RESEARCH AND DEVELOPMENT) PROGRAM. (D; D6)

OPNAVINST 7000.17A of 9/15/76, COST ANALYSIS. (2.7; C2.2)

OPNAVINST 7000.18 of 7/27/73, ECONOMIC ANALYSIS AND PROGRAM EVALUATION FOR NAVY RESOURCE MANAGEMENT. (2.7)

OPNAVINST 9010.300A of 1/11/85, DEVELOPMENT OF NAVAL SHIP CHARACTERISTICS. (2.5.8)

SECNAV

SECNAVINST 1040.1 of 3/15/85, MATERIEL PROFESSIONAL (MP) CAREER PROGRAM. (1.6.4)

SECNAVINST 3900.13A of 11/1/63, MANAGEMENT OF RESEARCH AND DEVELOPMENT LABORATORIES. (1.8; F; F2)

SECNAVINST 3900.29B of 8/22/73, STANDARD FORMAT REQUIREMENTS FOR SCIENTIFIC AND TECHNICAL REPORTS. (6.7.2; D; D3.1.3)

SECNAVINST 3900.32B of 7/17/74, POLICY AND REQUIREMENTS FOR REPORTING WORK UNIT LEVEL INFORMATION (DD FORM 1498). (6.7.7.1)

SECNAVINST 3900.37A of 10/27/71, RAPID DEVELOPMENT CAPABILITY FOR WARFARE SYSTEMS. (6; 6.3.8)

SECNAVINST 3900.40A of 1/14/82, POLICY

AND ASSIGNMENT OF RESPONSIBILITIES OF THE INDEPENDENT RESEARCH AND DEVELOPMENT PROGRAM. (6.5.6.3; D; D3.1.2)

SECNAVINST 3900.43 of 12/29/83, NAVY SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM (STIP). (1.5.3; D; D1; D3)

SECNAVINST 3910.3 of 4/6/82, RESEARCH AND DEVELOPMENT LABORATORIES. (1; 4.6.8.2; F; F2; F2.1)

SECNAVINST 4200.31A of 10/23/85, CONTRACTED ADVISORY AND ASSISTANCE SERVICES (CAAS). (2.2.4.1)

SECNAVINST 4210.6 of 11/20/85, ACQUISITION POLICY. (2.5; 6; 6.3.4; 6.6.4)

SECNAVINST 4210.7 of 6/16/86, EFFECTIVE ACQUISITION OF NAVY MATERIAL. (2.5; 2.5.1.1; 2.5.3; 6.1.2; 6.3.7.1; 6; 7.1.7.3)

SECNAVINST 4210.8 of 8/4/86, ACQUISITION ORGANIZATION AND PROCEDURES. (1.4.7)

SECNAVINST 5000.1B of 4/8/83, SYSTEM ACQUISITION. (1.4.4; 1.6; 1.7.7; 2; 2.2.10; 2.5; 2.5.1.2; 2.5.2; 2.5.3; 2.5.4; 2.5.5.4; 2.5.6.3; 2.5.7.2; 2.6; 7.1.3; 7.1.4; 7.2.9; E9.7; J)

SECNAVINST 5000.16E of 3/31/86, DEPARTMENT OF THE NAVY PLANNING, PROGRAMMING, AND BUDGETING SYSTEM (PPBS). (3; 3.3; 3.4; 4.2; 4.4; 4.4.4.2; J)

SECNAVINST 5000.32 of 2/21/85, ADDITIONAL REPORTING RESPONSIBILITIES OF THE ASSISTANT SECRETARY OF THE NAVY (SHIPBUILDING AND LOGISTICS) AND ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS). (1.4.7.4)

SECNAVINST 5000.33A of 8/27/86, PROGRAM MANAGEMENT PROPOSAL PROCESS. (3.3.14; 5.4)

SECNAVINST 5000.39A of 3/11/86, ACQUISITION

AND MANAGEMENT OF INTEGRATED LOGISTIC SUPPORT (ILS) FOR SYSTEMS AND EQUIPMENT. (2; 2.6; 7.7)

SECNAVINST 5210.11C of 8/13/82, DEPARTMENT OF THE NAVY STANDARD SUBJECT IDENTIFICATION CODES. (B2; C9)

SECNAVINST 5410.85B of 6/6/80, FUNCTIONS OF THE DEPARTMENT OF DEFENSE AND ITS MAJOR COMPONENTS. (1; 1.1; 1.2.1; 1.3; 1.4.1; 7.2.2)

SECNAVINST 5420.79C of 2/17/84, THE NAVAL RESEARCH ADVISORY COMMITTEE. (E9.3)

SECNAVINST 5420.188 of 3/31/86, NAVY PROGRAM DECISION MEETINGS (NPDM). (2.5.6.3; E9.7)

SECNAVINST 5430.7L of 6/7/79, ASSIGNMENT OF RESPONSIBILITIES TO AND AMONG THE CIVILIAN EXECUTIVE ASSISTANTS TO THE SECRETARY OF THE NAVY. (1; 1.4; 7.2.2; E2)

SECNAVINST 5430.20C of 6/20/79, OFFICE OF NAVAL RESEARCH. (1.4.9; 4.6.7; E7)

SECNAVINST 5430.55B of 9/10/84, DESIGNATION OF SPECIAL ASSISTANT (FINANCIAL MANAGEMENT) TO THE ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING, AND SYSTEMS). (4.6.7)

SECNAVINST 5430.60B of 8/12/75, OFFICE OF PROGRAM APPRAISAL; RESPONSIBILITIES OF. (E2.2)

SECNAVINST 5430.67A of 5/22/75, ASSIGNMENT OF RESPONSIBILITIES FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION. (1; 1.4; 4; 4.6; 4.6.8.1; E2; E7)

SECNAVINST 5430.79B of 7/14/86, NAVAL OCEANOGRAPHY POLICY, RELATIONSHIPS, AND RESPONSIBILITIES. (E3.9.2)

SECNAVINST 5740.26 of 3/24/86, RELATIONS WITH THE GENERAL ACCOUNTING

OFFICE (GAO). (5.6)

SECNAVINST 7000.14B of 6/18/75, ECONOMIC ANALYSIS AND PROGRAM EVALUATION FOR NAVY RESOURCE MANAGEMENT. (2.7)

SECNAVINST 7000.15C of 3/17/80, CONTRACT COST PERFORMANCE, FUNDS STATUS AND COST/SCHEDULE STATUS REPORTS. (6.7.4.1; 6.7.4.3)

SECNAVINST 7000.17B of 4/14/78, CONTRACT COST PERFORMANCE MEASUREMENT FOR SELECTED ACQUISITIONS. (6.7.1)

SECNAVINST 7000.19B of 3/12/75, DEPARTMENT OF THE NAVY COST ANALYSIS PROGRAM. (2.7)

SECNAVINST 7000.20 of 4/10/74, CONTRACT COST DATA REPORTING (CCDR). (6.7.4.2)

SECNAVINST 7040.6B of 1/2/80, DEFINITIONS OF EXPENSE AND INVESTMENT COSTS. (5.3.3)

SECNAVINST 7045.9B of 3/6/80, MILITARY CONSTRUCTION AUTHORIZATION AND APPROPRIATION. (2.6.2)

SECNAVINST 7510.7C of 12/19/84, DEPARTMENT OF THE NAVY AUDIT MANUAL FOR MANAGEMENT. (5; 5.6)

SECNAVINST 7700.5E of 1/11/84, SELECTED ACQUISITION REPORTS (SAR). (2.7; 6.7.6; C2.1)

SECNAVINST 12920.1A of 1/5/83, SENIOR EXECUTIVE SERVICE (SES). (1.6.3)

SECNAVINST 12950.11 of 8/21/74, DEPARTMENT OF THE NAVY CIVILIAN WEAPON SYSTEMS ACQUISITION MANAGER CAREER MANAGEMENT PROGRAM. (1.6.3)

INDEX

A

- Accelerated development procedures 6.3.8
- Acceptance/approval milestones 7.1.7
- Accounting for RDT&E 5.3
- Accrued expenditures, accounting for 5.3.5
- Acquisition
 - Alternative means of 6.1.4,6.1.5
 - AP (Acquisition Plan) 6.3.7
 - Advanced Technology Panel (ATP) E9.5.3
 - Basic roles in 6.1.3
 - Categories (ACAT) 2.5.2
 - Executive
 - Defense (DAE) 1.2.4
 - Navy 1.4.7.1
 - Management Systems List (AMSL) 6.7.1
 - Manager 1.7.9
 - Of R&D, fundamental policy 6.1.1
 - Participants in process 1.7
 - Phases 2.2.10
 - Policy on selection of performers 6.1.1,6.1.7
 - Process Outline J
 - Program Sponsor 1.7.11
 - Review Board (ARB) E9.8
 - Strategy of 2.5.1.2
 - Strategy Paper 2.5.1.2
 - Strategy sequential 2.7.4
 - Team 6.4.1
 - Technical assistance for 6.4
- Advanced Development (6.3) defined 2.2.7.3
- Demonstration and validation phase 2.2.10.3
- Functions of 2.2.8
- Role of Laboratories in 6.1.6.2
- Advanced Technology Development (ATD) 2.2.10.1
- Air Systems Command (NAVAIR) E4.2
- Allocations, of funds 5.1.1,5.1.3
- AMRAD (DOD Air Munitions Requirements and Development Committee)
 - Navy member of E3.11.5
- AMSL (Acquisition Management Systems List) 6.7.1
- AP (Acquisition Plan) 6.3.7
- NDI in 6.3.7.1
- Appeal
 - Defined 4.2
 - Use of in budget process 4.4.3,4.8.6
- Apportionment 5.1.1
 - Defined 5.1.1.1
 - Documentation of 5.1.2
 - Request 5.1.1.2
- Appraisals (PPBS document) 3.3.5
- Appropriations
 - Act, responses to 5.1
 - Actions on general provisions of act 5.1.4
 - Classifications used for C6
 - Defined 4.2
 - Duration of availability 4.2
 - Hearings, Congressional 4.5.1,4.8
 - Late 4.9
 - Listed 4.3.1
 - Manager, responsibilities of 4.2
 - RDT&E,N, ASN(R,E&S) as manager 1.4.2
 - Sponsor 1.7.1
 - Structure, purpose of 4.3.3
- Approval
 - For full production 7.1.7.1
 - For limited production 7.1.7.2
- Armed Services Committees
 - Authorization hearings on budget 4.5.1,4.8
- Army requirements documents
 - Use of by Marine Corps 2.5.9
- Assistant Secretary of Defense (Acquisition and Logistics (ASD(A&L))) 1.2.7,E1.5
- Assistant Secretary of Defense (Comptroller) E1.4
- Assistant Secretary of the Navy (Research, Engineering & Systems) .. 1.4.2,E2.1
 - Duties and responsibilities E2.1.1
 - Manager RDT&E,N appropriation 1.4.2
 - Navy Acquisition Executive .. 1.4.2,1.4.3,1.4.7.1
 - Organization of office of E2.1.3
 - Principal advisors 1.4.2
 - RDT&E responsibilities 1.4.2
 - Relationships E2.1.2
 - Role in preparation/justification of budget 4.6.3
 - T&E responsibilities of 7.2.2

Witness for Appropriation hearing	4.8.4
Assistant Secretary of the Navy (Shipbuilding and Logistics)	1.4.3,1.4.7.1
ATD (Advanced Technology Development)	2.2.10.1
Atlantic Fleet Undersea Test and Evaluation Center (AUTECH)	G5.1
Atlantic Fleet Weapons Training Facility	G3.3
ATP (Advanced Technology Panel)	E9.5.3
Audit Program, Navy	5.6.2
Contract	5.6.2
Internal	5.6.2
Audits and reviews	5.6
AUTECH (Atlantic Fleet Undersea Test and Evaluation Center)	G5.1
Authorization hearings (Congressional)	4.5.1,4.8

B

Balanced program	
Concept of	4.4.1
BAM (Baseline Budget Assessment)	3.3.16
Baseline cost estimates	2.7.3.3
Qualities of	C2
Bid package	
Defined	6.6.2,6.6.3
Bidders	
Conference	6.6.3
Evaluation of	6.6.4
Mailing lists	6.6.3
BIS (see Board of Inspection and Survey)	
Board of Inspection and Survey	7.2.4,G3.1
Acceptance trials	7.4.3
Board of Naval Studies of the National Academy of Sciences	E9.9
Brassboard	2.2.10.3
Broad Agency Announcement Technique	6.6.6
Budget	Chs. 4,5
Activities (RDT&E)	
Defined	C6.2
Listed	4.3.2,C6.2
Annex material	4.4.4.1
Backup material	4.4.4.1
CNR responsibilities	1.4.4,4.6.6
Current Services	4.4.5.1
Justification before Congress	4.8
Justification material	4.4.4.1
Operating	5.3.4.2
Preparation and justification of	Ch. 4
Procedural guidance	4.4.4.1

Process	4.4
Supra-Navy participants in	4.5
Relation to FYDP	4.1
Role in management process	4.1
Structure	4.3,C6.1
Substantive guidance	4.4.4.2
Summary Table	4.4.4.1
Terms and Concepts	4.2
Budget and Impoundment Control Act of 1974	4.4.5

C

CAIG (DOD Cost Analysis Improvement Group)	2.7.3.1
Capability System	
Concept of	2.2.1
Elements of	2.2.1
RDT&E as a subsystem of	2.2.5
Categories (FYDP) of RDT&E	2.2.7
CCDR (Contractor Cost Data Reporting) .	6.7.4.2
CEB	E9.5
Role in preparation/justification of budget	4.6.4
Center for Naval Analyses (CNA)	F10.8
Certification of ship aviation facilities	7.8.5
CFSR (Contract Funds Status Report)	6.7.4.3
Charters for designated programs	1.6.2
Chief of Naval Operations (see CNO)	
Chief of Naval Research (see CNR)	
Circular A-109, OMB	2.2.9.1
Civil Engineering Laboratory	F7.1
Classification Systems	App. C
Criteria for	C1.2
Functions of	C1.1
Classifications used for Appropriations	C6
CNA (Center for Naval Analyses)	F10.8
CNO (Chief of Naval Operations)	1.4.5,E3
Executive Board (CEB) (See CEB)	
Policy and Planning Guidance (CPPG)	3.3.4
Program Coordinator	1.7.5
Role in definition of T&E issues and problems	7.5.1
Role in budget process	4.6.4
T&E organizations reporting to	G3
T&E responsibilities of	7.2.3
CNR (Chief of Naval Research)	1.4.4,E7
As a principal advisor to	
ASN(R,E&S)	1.4.2
Laboratories reporting to	F3
RDT&E responsibilities	1.4.4

Role in preparation/justification of budget	4.6.6
Colleges and universities	
Class of RDT&E performers	6.1.4
Command and Control Development	
Division (OP-986)	E3.11.10
Commandant of the Marine Corps (CMC)	1.4.6,E6
Role in Preparation/justification of budget	4.6.5
T&E organizations reporting to	G4
Commerce Business Daily	
Synopsizing of Solicitations in	6.6.3
Committees	E9
COMOPTEVFOR	7.2.5,G3.2
T&E information for	7.6.4
Competition in RDA acquisition, policy on	6.3.4
Comptroller of the Navy (NAVCOMPT)	4.6.2
Comptroller of OCNR	4.6.6
Concept Exploration Phase	2.2.10.2
Conceptual effort	
Role of Laboratories in	6.1.6.3
Concurrent resolutions	4.4.5.2
Congress(ional)	
Budget committees	4.4.5.4.8
Budget Office (CBO)	4.4.5.4.8
Concurrent resolutions	4.4.5.2
Hearings	4.8
Conduct of	4.8.4
Guidelines for witnesses	4.8.2
Intent of as budget guidance	4.4.4.2
Preparation for	4.8.3
Review and editing of transcript	4.8.5
Interest in OT&E	7.1.5,G1
Role in preparation/justification of budget	4.5.1
Consolidated Subject Index,	
Navy Directives	B3.1
Continuing resolution	
Use of with late appropriations	4.9
Contract(s)	
Administration of	6.7.5
And other acquisition instruments	6.5
Changes and amendments to	6.7.8
Data Requirements List	
(DD Form 1423)	6.7.1
Defined	6.5.2
File	6.3.2
Funds Status Report (CFSR)	6.7.4.3
General provisions	6.5.5
Grants	6.5.1

In-house laboratory work request	6.2.4
Types of	6.5.2
Cost	6.5.2.2
Cost-plus-a-fixed-fee	6.5.2.3
Cost-plus-incentive-fee	6.5.2.4
Cost-sharing	6.5.2.1
Firm-fixed-price	6.5.2.6
Fixed-price incentive	6.5.2.5
Letter contract	6.5.2.8
Purchase order	6.5.2.7
Work statement	6.5.4
Contracting	
Activities	6.4.2
For Research and Exploratory	
Development	6.5.6
Officer	1.7.10,6.1.3
Right of losers to information	6.3.2
Role of small business	6.3.3
Source selection	6.6.5
Contractor Cost Data Reporting (CCDR) .	6.7.4.2
COSATI (Committee on Scientific and Technical Information)	C10
S&T fields and groups	C10.1
Cost	
Allocation to R&D projects benefited	5.3.4
Analysis	2.7.3
Improvement Group	2.7.3.1
Responsibilities	2.7.3.1
Assignment of to expenses vs investment	5.3.3.1
Considerations	2.7
Criteria and definitions for assignment of	5.3.3.2
Estimates	
Classes of	C2
For JRMB	2.7.3.1
For use in SAR	C2.1
Independent	2.7.3.1
Measures of confidence	C2.2
Parametric	2.7.3.2
Prescribed for use in OPNAV	
Form 7000/2	C2.2
Qualities of	C2
Estimation	2.7.3
Data for	6.7.4.2
Growth defined	2.7.3.3
Identification of	5.3.3
Information System, Navy (NCIS)	2.7.3.5
Life cycle	2.7.3.6
Measurement	2.7.5
Methodologies	2.7.3.2
Overruns defined	2.7.3.3
Parametric	2.7.3.2
Performance Report (CPR)	6.7.4.1

Reporting	2.7.5
Standard definitions	C8
Cost/Schedule Control Systems Criteria (CSCSC)	6.7.1,6.7.4.2
Coupling	1.5,2.2.8,2.2.9
Information services as aid to	1.5.3
Panels, Committees, Boards, etc., as an aid to	1.5.2
User-Supplier dialogue as framework for	2.2.9.1
CPPG (CNO Policy and Planning Guidance)	3.3.4
CPR (Cost Performance Reports)	6.7.4.1
CSCSC (Cost/Schedule Control Systems Criteria)	6.7.1,6.7.4.1
Current effort	
Identification of	6.2.1,D3.1.1,D3.1.2
Current Estimates (CE) for SAR, defined	C2

D

DARPA (Defense Advanced Research Projects Agency)	E1.1.1
Data acquisition and data rights	6.5.5.2
Data exchange	
Government-Industry Program (GIDEP)	D7
D&F (see Determinations & Findings)	
DCA (Defense Communications Agency)	E1.8.2
DCAA (Defense Contract Audit Agency)	E1.8.3
DCASR (Defense Contract Administration Service)	6.7.5,E1.8.5
DCNO (Deputy Chief of Naval Operations)	
(Air Warfare) (OP-05)	E3.5
(Logistics) (OP-04)	E3.4
(Manpower) (OP-01)	E3.1
(Plans and Policies) (OP-06)	E3.6
(Submarine Warfare) (OP-02)	E3.2
(Surface Warfare) (OP-03)	E3.3
DCP (Decision Coordinating Paper)	2.5.5.2
DC/S (RD&S) Marine Corps	1.4.6.1,E6.1.1
DD Forms	
1105 Approved Apportionment and/or Reapportionment Schedule	5.1.1.2,5.1.2.1
1105 Purchase Order	6.5.2.7
1414 Base for Reprogramming Actions	5.5
1415 Reprogramming Action	5.5.1
1416 Report of Programs	5.5.3
1423 Contractor Data Requirements	
List	6.5.5.2,6.7.1
1473 Report Documentation Page	6.7.2
DTIC Data Base	D3.1.2

1498 Research and Technology Work Unit	
Summary	6.7.7.1
DTIC Data Base	D3.1.2
Role in identifying relevant work	6.2.1
1660 Management Systems Summary	
List	6.7.1
Decision Coordinating Paper (DCP)	2.5.5.2
Defense Advanced Research Projects Agency (DARPA)	E1.1.1
Defense Acquisition	
Executive (DAE)	1.2.4,E1.7
Defense Agencies	E1.8
Defense Communications Agency (DCA)	E1.8.2
Defense Contract Administration Service (DCASR)	6.7.5,E1.8.5
Defense Contract Audit	
Agency (DCAA)	E1.8.3
Defense Guidance (DG)	3.3.1
Defense Intelligence Agency (DIA)	E1.8.4
Defense Logistics Agency (DLA)	E1.8.5
Defense Nuclear Agency (DNA)	E1.8.1
Defense RDT&E On-Line Systems (DROLS)	D3.2.1
Defense Research Sciences, subelements of	C3.1.2
Defense Resources Board (DRB)	E9.6
Defense Science Board (DSB)	E9.1
Defense Systems Management College (DSMC)	
Training of Program Managers	1.6.3,1.6.4
Defense Technical Information Center (DTIC)	D3
Services	D3.3
T&E reports available through	7.6.6
Deferrals	
Administration of	5.1.5
Demonstration and Validation phase of weapons life cycle	2.2.10.3
Demonstration of performance	
Policy on	7.1.3
Department of Defense (see DOD)	
Department of the Navy Five-Year Program (see DNFYP)	
Department of the Navy Objectives	1.4
Deputy Chief of Naval Operations (see DCNO)	
Deputy Chief of Staff (RD&S)	
Marine Corps	1.4.6.1,E6.1.1
Deputy Under Secretary of Defense, Research and Engineering (Test and Evaluation) (DUSDRE(T&E))	1.2.3.2,7.2.1.1,G2.1
Design specifications	6.5.3
Design to cost	2.7.2
Designated Projects	

Development Center, Marine Corps Development
 and Education Command (see MCDEC)
 Development Coordinator 1.7.6
 Development Estimates (DE) for SAR,
 defined C2.1
 Development Test and Evaluation
 (DT&E) 7.4.1
 DIA (Defense Intelligence Agency) E1.8.4
 DG (Defense Guidance) 3.3.1
 Directive
 DOD, how to obtain B4
 Navy, how to obtain B3
 Numbering of Navy B2,C9
 System described App. B
 Director, Navy Program Planning (see OP-090)
 Director, Operational Test and
 Evaluation (DOT&E) ... 1.2.6,7.2.1.2,E1.3,G2.2
 Director Program Analysis and Evaluation
 DPA&E 1.2.5,E1.6
 Director, Research, Development, and
 Acquisition (see DRD&A)
 Disbursement, defined 5.3.5
 DLA (Defense Logistics Agency) E1.8.5
 DNA (Defense Nuclear Agency) E1.8.1
 DNFYP (Department of the Navy
 Five-Year Program)
 Change process 3.4
 Documents used in updating 3.3
 DNCPPG (Department of the Navy
 Consolidated Policy and
 Planning Guidance) 3.3.3
 Documents
 Identifying D3.2.6
 Obtaining copies D3.2.5
 DOD Budget structure C6.1
 DODISS (DOD Index of Specifications and
 Standards) 6.5.3
 DOP (Development Options Paper) 2.5.3.2
 DOT&E (Director, Operation Test and
 Evaluation) 1.2.6,7.2.1.2,E1.3,G2.2
 DPA&E (Director Program Analysis and
 Evaluation) 1.2.5,E1.6
 DPSB (DON Program Strategy Board) E9.11
 DRB (Defense Resources Board) E9.6
 DRD&A (Director RD&A)
 (OP-098) 1.4.5.1,E3.11
 Divisions in office of E3.11
 Functions E3.11
 Mission E3.11
 Organization of office E3.11
 RDT&E responsibilities E3.11

Role in preparation/justification of
 budget 4.6.4.1
 Staff assistants E3.11
 Sponsor RDT&E appropriation 1.7.1
 DSB (Defense Science Board) E9.1
 DT&E (Development Test and
 Evaluation) 7.4.1
 DTC (Design to Cost) 2.7.2
 DTIC (see Defense Technical
 Information Center)

E

Economic analysis 2.7.1
 In DCP 2.7.1
 Educational and nonprofit institutions
 Government equipment for 6.5.6.2
 Engineering Development (6.4) defined ... 2.2.7.4
 Engineering management 2.2.4.2
 Evaluation
 Defined 7.1.1
 Execution of R&D, fundamental
 policy for 6.1.1
 Expenditure of funds 5.2
 Expertise
 Identification of D3.2.7,6.2.1
 Exploratory Development (6.2)
 Block Program
 Defined C4.1.3
 Guidance 2.4.3.3
 Plans 2.4.3.4
 Investment Strategy 2.4.3.1
 Mission Area Strategy 2.4.3.2
 Planning process 2.4.2
 Program element C4.1.1
 Project defined C4.1.4
 Contracting for 6.5.6
 Defined 2.2.7.2
 Planning documentation 2.4.3
 Program 2.4.1
 Program building blocks C4.1
 Program elements C4.1.1
 Program planning structure C4
 Program structure C4

F

Facilities
 Engineering Command (NAVFAC) E4.3
 Funding through MILCON
 appropriation 2.6.2

Planning for	2.6.2
FAR (Federal Acquisition Regulation)	6.3.1
Feasibility Studies	
Role of laboratories in	6.1.6.3
Federal Acquisition Regulation (FAR)	6.3.1
Federal Contract Research Centers (see FCRC)	
Fiscal Year	4.4.5
Flash Report	2.5.5.6
Fleet Development Groups, OPTEVFOR G3	2.3.5
Fleet RDT&E Support	7.3.7
Marine Force (FMF)	E6.4
Priorities	7.3.7.2
Requirements	7.3.7.1
Flyaway Cost	
Definition of	2.7.3.4.C8
Follow-on OT&E	
(FOT&E)	7.4.2
FOT&E (Follow-on OT&E)	7.4.2.7.4.2.4
Full disclosure policy in R&D contracts	6.5.6.1
Full-Scale Development Phase	2.2.10.4
Role of laboratories in	6.1.6.3
SAR reporting initiated in	6.7.6
Functional area	
Fund, working capital	5.3.4.1
FYDP (Five-Year Defense Program)	Ch.3
Annual updating process	3.4
Description of	3.2
Documents used in updating	3.3
Major programs listed	C7.1
Program element, defined	C7.2
Relation to budget	4.1

G

GAO (General Accounting Office)	5.6.1
GFE (Government Furnished Equipment) ...	6.3.5
GIDEP (Government-Industry Data Exchange Program)	D7
Government-furnished equipment (GFE) ...	6.3.5
Government-Industry Data Exchange Program (GIDEP)	D7
Grants	6.5.1
Guidance procedural	4.4.4.1

H

Harmonizing programming, budgeting, and accounting	5.3.2
"Heads-Up" Report	3.3.13
Heartburns and Appeals	4.8.6

I

IAC (Information Analysis Centers)	D4
ILS (Integrated Logistic Support)	2.6.1
Concept	2.6.1
Elements of	2.6.1
Plan	
Role of laboratories in preparation of ...	6.1.6.3
T&E of	7.7
Timing of	7.7.2
Utilization of T&E results	7.7.4
Incremental funding (See Incremental programming)	
Incremental programming policy	4.4.2
Independent Research and Independent Exploratory Development (see IR/IED)	
Industrial Fund, Navy (NIF)	5.3.4.1
Information Analysis Centers (IAC)	D4
Information flow	
In RDT&E process	2.2.2
In-house performance, acquisition through	6.1.4.1.6.2
In-house vs contracting out decision	6.1.7
Initial Operational Test and Evaluation (see IOT&E)	
Innovation	
Concept of	2.2.6
Differentiated from inventional	2.2.6
INSURV (Board of Inspection and Survey)	7.2.4.G3.1
Accepted trials	7.4.3
Integrated Logistic Support (see ILS)	
Integrated Program Summary (see IPS)	
Invention	
Concept of	2.2.6
Different from innovation	2.2.6
Investment	
As FYDP cost category	5.3.3.1
Investment Strategy Review (ISR)	3.3.9
IOT&E (Initial Operational Test and Evaluation)	7.4.2
Defined	7.4.2
OPEVAL as	7.4.2.2
Policy on timing of	7.1.3
IPS (Integrated Program Summary)	2.5.5.3
IR&D (Independent Research and Development)	6.5.5.3
Data base of DTIC	D3.1.2
IR/IED (Independent Research and Independent Exploratory Development)	6.2.6

Role in technology base development 6.1.6.1
 ISR (Investment Strategy Review) 3.3.9

J

JCS (Joint Chiefs of Staff)
 RDT&E responsibilities 1.3
 JMSNS (Justification for Major System
 New Start) 2.5.3.5
 Joint Chiefs of Staff (see JCS)
 Joint Program Assessment Memorandum
 (JPAM) 3.3.11
 Joint Requirements and Management
 Board (JRMB) 2.5.6.2,E9.2
 Joint Strategic Planning Document
 (JSPD) 3.3.2
 Joint tests 7.4.4
 Funding of 7.4.4.4
 JSPD (Joint Strategic Planning
 Document) 3.3.2
 Justification
 Role in budget process 4.4.3
 Of budget before Congress 4.8
 Justification for Major System New Start
 (JMSNS) 2.5.3.5

K

Knowledge, development of as purpose of
 RDT&E 2.2.2

L

Laboratories/Centers App. F
 Functions in execution of RDT&E 6.1.6
 Funding of work 6.2.3
 Identification of capabilities of 6.2.1
 IR/IED 6.2.6
 Management of F2
 Monitoring of work performed by 6.2.5
 Naval laboratories, centers, and
 test activities 1.9
 Atlantic Undersea Test and Evaluation Center
 (AUTEC) G5.1
 David W. Taylor Naval Ship Research and
 Development Center F4.1
 Marine Physical Laboratory F10.1
 Naval Aerospace Medical Research
 Laboratory F5.7
 Naval Air Development Center F4.2
 Naval Air Engineering Center G6.1
 Naval Air Propulsion Center G6.2

Naval Air Test Center G6.3
 Naval Biodynamics Laboratory 5.5.8
 Naval Biosciences Laboratory F10.2
 Naval Civil Engineering Laboratory F7.1
 Naval Coastal Systems Center F4.3
 Naval Dental Research Institute F5.6
 Naval Environmental Prediction Research
 Facility F3.3
 Naval Explosive Ordnance Disposal
 Facility F8.1
 Naval Medical Research Institute F5.1
 Naval Medical Research
 Units F5.3,F5.4
 Naval Ocean Research and Development
 Activity F3.2
 Naval Ocean Systems Center F4.4
 Naval Ordnance Missile Test Station G7.1
 Naval Research Laboratory F3.1
 Naval Ship Weapons Systems Engineering
 Station (NSWSES) G7.2
 Naval Submarine Medical Research
 Laboratory F5.2
 Naval Surface Weapons
 Center F4.7,G5.3
 Naval Underwater Systems Center F4.8
 Naval Weapons Center F4.9,G5.2
 Naval Weapons Evaluation Facility G6.5
 Navy Clothing and Textile Research
 Facility F9.1
 Navy Personnel Research and Development
 Center F4.5
 Navy Space System Activity F4.6
 Pacific Missile Test Center G6.4
 Negotiation with, 6.2.2
 Performance of RDT&E effort by 6.2
 Performers of RDT&E 6.1.4.1
 Reporting by 6.7.7.3
 Reporting to CNR F3
 Role in Advanced Development 6.1.6.2
 Role in execution of Marine Corps
 RDT&E 6.8.5
 Role in RDT&E F1
 Role in systems definition 6.3.5,6.1.6.3
 Staffing for acquisition team
 source of 6.4.1
 Support for systems development 6.4.1
 T&E capabilities of G5
 Technical advice
 Source 6.1.6.4
 LCC (Life Cycle Costing) 2.7.3.6
 Letter contracts 6.5.2.8

Libraries	
Technical	D2
Life Cycle	
Weapons	2.2.10
Life Cycle Costing (LCC)	2.7.3.6
Low-rate initial production (LRIP)	7.4.2.1

M

Major Program (FYDP)	
Listed	3.2.3,C7.1
Major Range and Test Facility Base (see MRTFB)	
Management and Support (6.5)	
Defined	2.2.7.5
Management control systems	
In contracting	6.7.1
Management Information Paper (see MIP)	
Management Systems Summary List (DD Form 1660)	6.7.1
Marine Corps	
Development and Education Command (see MCDEC)	
Fleet Marine Forces (FMF)	7.2.9.2,E6.4
Long-Range Plan (MLRP)	2.1.3.1
Mid-Range Objectives Plan (MMROP)	2.1.3.2
Organization for RDT&E	E6
STOs, ROCs and ORs	2.1.3.3
Marine Corps Program Decision Meeting (MCPDM)	2.5.6.6,E9.4
Marine Corps RDT&E	
Alternative execution means	6.8.1
DC/S(RD&S),	1.4.6.1,E6.1.1
Development Center, MCDEC	
Role in execution	6.8.4,E6.2.2
Execution of	6.8
HQMC organization for	E6.1
Liaison organization	E6.3
Management of acquisition of	6.8.3
MCDEC organization for	E6
Organization for RDT&E	E6
Program guidance within HQMC	6.8.2
Requirements documentation of	2.5.9
Requirements	6.8.5
Requirements	F10.1

MCOTEA (Marine Corps Test and Evaluation Activity)	7.1.3,7.2.9.1,G4.2
MCPDM (Marine Corps Program Decision Meeting)	2.5.6.6,E9.4
Medical Command, Naval	E8
Medical Research and Development Command	E8.1
Methodology, Costing	2.7.3.2
MILCON	
As a T&E cost	7.5.4
As element of program acquisition cost	2.7.3.4
Funding of RDT&E-related construction	2.6.2
Role in acquiring T&E facilities	7.3.3
Milestones acquisition	2.5.4
Pre-milestone program	
Review process	2.5.1.5
0 — Mission Need Determination	2.5.4.1
I — Demonstration and Validation	2.5.4.2
II — Full-Scale Development	2.5.4.3
III — Production and Deployment	2.5.4.4
Milestones, decision	2.5.4
T&E information inputs into	7.1.2.2
Materiel Professional (MP) Program	1.6.4
MIL-STD-499A, Engineering Management	2.2.4.2
MIL-STD-847A, Format Requirements for Scientific and Technical Reports Prepared by and for the DOD	6.7.2
MIL-STD-881, Work Breakdown Structure	2.7.3.2,C11
Missions and functions of laboratories and centers	
Information on	6.2.1,App. F
Mission Need Classification Structures	C5
Mission Need Determination (Milestone 0)	2.5.4.1
Mission readiness criteria	C5.2
MLRP (Marine Corps Long-Range Plan)	2.1.3.1
MMROP (Marine Corps Mid-Range Objectives Plan)	2.1.3.2
MRTFB (Major Range and Test Facility Base)	7.3.5
Elements of: Army, Navy, Air Force	7.3.5.1
Mode of operation	7.3.5

N

NAE (Naval Acquisition Executive)	1.4.7
NARDIC (Navy Acquisition, Research and Development Information Center)	D5
NARSUP (Navy Acquisition Regulation Supplement)	6.3.1

NAPDD (Non-Acquisition Program Decision Document)	2.5.5.7
NATC (Naval Air Test Center)	G6.3
National Academy of Sciences Board of Naval Studies	E9.9
National Security Act of 1947	1.2.1
National Security Agency (NSA)	E1.8.6
National Technical Information Service (NTIS)	D8
NAVAIR (Naval Air Systems Command) Organization for RDT&E	E4.2
T&E activities of	G6
Laboratories	F6
Naval Unit Status Criteria	C5.2
Naval Explosive Ordnance Disposal Technology Center (NEODTC)	F8.1
Naval Laboratories and T&E activities (see Laboratories/Centers)	
Naval Medical Command	E8
Naval Oceanography Command	E3.12.4
Naval Research Advisory Committee (NRAC)	E9.3
Naval Research Program Element (FYDP)	C3.1.1
Planning of	2.3
Structure	C3
Subelements of Defense Research Sciences	C3.1.2
Naval Research Requirements (see NRR)	
NAVCOMPT (Comptroller of the Navy) Role in preparation/justification of budget	4.6.2
NAVFAC (Naval Facilities Engineering Command)	E4.3
Laboratory	F3.5
NAVSEA (Naval Sea Systems Command) ..	E4.4
NAVSUP (Naval Supply Systems Command)	E4.5
Laboratory	F9
Navy Acquisition Executive (NAE)	1.4.7.1
Navy Acquisition, Research & Development Information Center (NARDIC)	6.1.1, D5
Navy and Marine Corps Planning System ..	2.1
Navy Consolidated Subject Index (NAVPUB NOTE 5215)	B3.1
Navy Cost Information System (NCIS) ..	2.7.3.5
Navy Industrial Fund (NIF)	5.3.4.1
Navy/Industry Cooperative R&D Program (NICRAD)	D6
Navy Program Decision Meeting (NPDM)	2.5.6.3, E9.7
Navy Program Planning Director of (OP-090)	E3.7
Navy Program Planning Office (see NPPO) ..	
NDCP (Navy Decision Coordinating Paper)	2.5.5.4
NDI (Non-Development Item) Acquisition plan	6.3.7.1
In acquisition planning	2.5.1.1
In DOP	2.5.3.2
Milestone decisions	6.1.2
Policy on	6.1.1
Specification Control Advocate as NDI Advocate	6.1.2
Summary discussion	6.1.2
T&E for	7.1.7.3
Needs As used by OSD	2.2.9.1
Differentiated from "requirements,"	2.2.9.1
NEODTC (Naval Explosive Ordnance Disposal Technology Center)	F8.1
NICRAD (Navy/Industry Cooperative R&D Program)	D6
NIF (Navy Industrial Fund)	5.3.4.1
Use by laboratories	6.2.3
Non-Acquisition Program Decision Document (NAPDD)	2.5.5.7
Non-Development Item (see NDI)	
NPDM (Navy Program Decision Meeting)	2.5.6.3, E9.7
NPPO (Navy Program Planning Office) (OP-090)	E3.7
Role in preparation/justification of the budget	4.6.4.2
NRAC (Naval Research Advisory Committee)	E9.3
NRL (Naval Research Laboratory)	F3.1
NRR (Naval Research Requirements) List of	C3.2
NSA (National Security Agency)	E1.8.6
NTIS (National Technical Information Service)	D8
O	
Obligation and expenditure of funds	5.2
Oceanographer of the Navy	E3.10.1
Advises ASN(R,F&S)	1.4.2, E2.1.3
OCNR (Office of the Chief of Naval Research)	1.4.4, E7
Authorized to issue grants	6.5.1
Budgetary guidance, promulgation of ..	4.4.4.1

Comptroller
 As assistant to ASN(R,E&S) for financial management 4.6.6
 Role in preparation/justification of budget 4.6.7
 Organization and mission of E7
 Office of Chief of Naval Operations (see OPNAV)
 Office of Naval Research E7.1
 Office of Program Appraisal (OPA) E2.2
 Represented on PDRC E9.10
 Office of the Secretary of Defense (see OSD)
 OMB (Office of Management and Budget)
 Circular A-109 2.2.9.1
 Role in preparation/justification of budget 4.5.3
 Support of President in preparation/justification of budget 4.5.2
 ONT (Office of Naval Technology) E7.2
 OP-01, DCNO (Manpower, Installations, and Logistics) E3.1
 OP-02, DCNO (Submarine Warfare) E3.2
 OP-03, DCNO (Surface Warfare) E3.3
 OP-04, DCNO (Logistics) E3.4
 OP-05, DCNO (Air Warfare) E3.5
 OP-06, DCNO (Plans and Policy) E3.6
 OP-090 (Director, Navy Program Planning) E3.7
 Role in budget process 4.6.4.2
 OP-90 (General Planning and Programming Division) E3.7.2
 OP-91 Program Resources
 Appraisal Division E3.7.2
 OP-094 (Director, Space, Command and Control) E3.9
 OP-095 (Director, Naval Warfare) E3.10
 OP-098 (Director, RD&A) E3.11
 Role in preparation/justification of the budget 4.6.4.1
 T&E responsibilities G2.3
 OP-983 (T&E Division)
 Responsibilities E3.11.9,G2.3.1
 OPA (Office of Program Appraisal) E2.2
 Operational Evaluation (OPEVAL) 7.4.2.2
 Operational Requirement (OR) 2.5.3.3
 Operational Systems Development (6.6)
 Defined 2.2.7.6
 Operational Test and Evaluation (OT&E) 7.4.2
 Director OT&E 1.2.6,7.2.1.2,E1.3,G2.2
 Force (see OPTEVFOR)

Operating budgets 5.3.4.2
 Role in funding work by laboratories 6.2.3
 OPEVAL (Operational Evaluation) 7.4.2.2
 OPNAV (Office of Chief of Naval Operations) E3
 OPTEVFOR (Operational Test and Evaluation Force) 7.2.5,G3.2
 Early coordination with 7.5.2
 Mission G3.2.1
 Separate OT&E organization 7.2.5
 Subordinate commands G3.2.3
 T&E responsibilities 7.2.5
 OR (Operational Requirement) 2.5.3.3
 Organization for RDT&E Ch. 1, App. E
 OSD (Office of Secretary of Defense) E1
 Organization for RDT&E E1
 OT&E (Operational Test and Evaluation) 7.4.2
 Congressional interest in 7.1.5,G1
 See also OPTEVFOR
 Director, Operational Test and Evaluation (DOT&E) 1.2.6,7.2.1.2,E1.3,G2.2
 Overview of the RDT&E process 2.2

P

Pacific Missile Test Center (PMTC) G6.4
 PAT&E (Product Acceptance Test and Evaluation) 7.4.1.4
 Patents
 As aid to coupling 2.2.9.4
 Contract provisions on rights 6.5.5.1
 PBD (Program Budget Decision) 4.5.4
 PD (Program Director) 1.7.7
 PDA (Principal Development Activity)
 Costing responsibilities of 2.7.3.1
 PDM (Program Decision Memorandum) 3.3.12
 PDRC (Program Development Review Committee) E9.10
 PEO (Program Executive Officer) 1.4.7.2
 Performance specification
 Defined 6.5.3
 Performers of RDT&E
 Classes of 6.1.4
 Commercial contractors 6.1.4.2,6.3
 Definition of as used in this Guide 6.1.4
 Educational and nonprofit 6.1.4.2
 In-house 6.1.4.1
 Out-of-house 6.4.4.2

Personnel support
 Authorization process 2.6.3
 Planning for 2.6.3
 Planning Estimate (PE) (SAR)
 Defined C2.1
 Planning, Programming and Budgeting System
 (PPBS) Ch. 3
 Planning System
 Navy and Marine Corps 2.1
 Concept of 2.1.1
 Intrarelationsips 2.1.2
 Platform resources, RDT&E 7.3.8
 PM (Program Manager) 1.6.2,1.7.4
 PMP (Program Management Proposal) 3.3.14,5.4
 PMTC (Pacific Missile Test Center) G6.4
 POM (Program Objectives
 Memorandum) 3.3.10
 PDM as decision document 3.3.12
 PPBS (Planning, Progressing, Budgeting System)3
 PR (Procurement Request) 6.6.1
 President, role in budget process 4.5.2
 Presolicitation Conference 6.6.3
 Process Outline
 Navy Systems Acquisition J
 Program Change Process 3.4
 Procurement
 Package, defined 6.5.5.2
 Request (PR) 6.6.1
 Production and Deployment Phase 2.2.10.5
 Production, approval for 2.5.1.6
 Program
 FYDP described 3.2
 Major listed 3.2.3,C7.1
 Update process 3.4
 Program Acquisition Cost 2.7
 Defined 2.7.3.4,C8
 Program Budget Decision (PBD) 4.5.4
 Program change process 3.4
 Program changes, control of 6.9
 Role of PMP in 3.3.14
 Program Coordinator (PC) 1.7.5
 Role in ship T&E 7.8.3
 Program Coordinators, CNO 1.7.5
 Role in definition of T&E issues and
 problems 7.5.1
 Program Decision Memorandum (PDM) .. 3.3.12
 Program Development Review Committee
 (PDRC) E9.10
 Program Director 1.7.7
 Program element 3.2.1,C4.1.1,C7.2
 Program Executive Officer (PEO) 1.4.7.2
 Program Initiation 2.5.3

Program management (of RDA performance) 6.9
 Program Management Proposal (PMP) 3.3.14,5.4
 Program Manager 1.4.7.3,1.7.4
 Program Objectives Memorandum (see POM)
 Program Resources Appraisal
 Division (OP-091) E3.7.2
 Program Sponsor 1.7.3
 Program Structure
 Naval Research C3
 Exploratory Development C4
 Programming
 Incremental 4.4.2
 Programs, major, listed 3.2.3
 Progress reports 6.2.5,6.7.3
 Project
 Exploratory Development, defined C4.1.4
 Project listings, RDT&E 4.2,6.7.7.2
 Program management 1.6
 Reason for 1.6.1
 Program Manager (PM) 1.7.4
 Program Managers
 Selection of 1.6.3
 T&E information for 7.6.2
 T&E responsibilities of 7.2.7
 Training of 1.6.4
 Programs, designated 1.6.2
 Charters 1.6.2
 Establishment of 1.6.2
 Staffing of 1.6.3
 Proposals
 Evaluation of 6.6.4
 Request for (see RFP)
 Purchase Description
 As substitute for specifications 6.5.3
 Purchase Order 6.5.2.7

R

Range and Test Facility Base, Major (see MRTFB)
 Ranges, Test
 Atlantic Fleet Weapons Training Facility .. G3.3
 AUTEC G5.1
 Naval Weapons Center G5.2
 Naval Surface Weapons Center G5.3
 RDC (Rapid Development Capability) 6.3.9
 RDDS (RDT&E Descriptive Summary) 4.4.6
 RDT&E Descriptive Summary (RDDS) 4.4.6
 RDT&E (Research, Development, Test,
 and Evaluation)
 Appropriation
 Budget activities of 4.3.2,C6.2
 As a subsystem 2.2.5

Committees concerned with	E9
Cost	
As element of Program Acquisition	
Cost	2.7.3
Field activities	1.9,F,G
Functional view of process	2.2.8
FYDP categories defined	2.2.7
Marine Corps planning categories listed	C5.1
Nature of process	2.2.2
Output of process	2.2.1
Overview of process	2.2
Performers	
Classes of	6.1.4
Policy on selection of	6.1.7
Project listings	4.2,6.7.7.2
Role of ONR Comptroller in	
preparation of	4.6.7
Role in apportionment	5.1.1.2
Responsibilities	
ASN(R,E&S)	1.4.2
CMC	1.4.6
CNO	1.4.5
CNR	1.4.4
DC/S(RD&S) Marine Corps	1.4.6.1,E6.1.1
Defense Acquisition Executive	1.2.4
Department of the Navy	1.4
Director RD&A	1.4.5.1
JCS	1.3
SECDEF	1.2.1
SECNAV	1.4.1
USDRE	1.2.3
Reclama, defined	4.2
National Data Base Directory	D3.2.7
Service	D3.2.7
Reporting by laboratories/centers	6.7.7.3
Reports, progress	6.7.3
Reports, technical	6.7.2
Announcement of	D3.2.2
Identifying	D3.2.6
Obtaining copies	D3.2.5
Reprogramming	5.5
Base for	5.5
DD Form 1415, use in	5.5.1
Hearing for	5.5.2
Procedures for	5.5.1
Reports	5.5.3
Reprogramming Action (see DD Form 1415)	
Request for Proposals (RFP)	6.6.2
Request for Quotations (RFQ)	6.6.2
Requirements	
Differentiated from needs	2.2.9.1
Requirements for ILS T&E	7.7.1
Obtaining copies of	D3.2.5
Marine Corps, documentation of	2.5.9
Requirements pull	2.2.9.2
Research, Naval (NRR)	2.3.3
Requirements for ILS T&E	7.7.1
Research and Advanced Technology	
Deputy Under Secretary for	1.2.3.1
Research and Technology Work Unit Summary	
(see DD Form 1498)	
Research (6.1)	
Naval Research Requirements	
(NRRs)	2.3.3
Contracting for	6.5.6
Defined	2.2.7.1
Of opportunity	2.3.1
Of response	2.3.2
Program building blocks	C3.1
Program elements	C3.1.1
Sponsor codes	C3.1.3
Resource Sponsor	1.7.2
RFP (Request for Proposals)	6.6.3
RFP/RFQ, promulgation of	6.6.3
RFQ (Request for Quotation)	6.6.3
ROC (Required Operational	
Capability)	2.1.3.3,2.5.9
<div style="text-align: center;"><u>S</u></div>	
SAR (Selected Acquisition Report)	2.7.5,6.7.6
SCIB (Ship Characteristics and Improvement	
Board)	2.5.6.5,2.5.8,E9.5.1
Scientific and technical reports	6.7.2
SCP (System Concept	
Paper)	2.5.5.1
SDDM (Secretary of Defense Decision	
Memorandum)	2.5.7.1
Sea Systems Command (NAVSEA)	E4.4
SECDEF (Secretary of Defense)	1.2.1
RDT&E responsibilities	E1
Role in preparation/justification	
of budget	4.5.4
SECNAV (Secretary of the Navy)	1.4.1,E2
Office of	E2
RDT&E responsibilities	1.4.1
Role in preparation/justification	
of budget	4.6.1
T&E responsibilities	7.2.2
Selected Acquisition Report (SAR)	2.7.5,6.7.6
Sequential acquisition strategy	2.7.4

SHAPM (Ship Acquisition Project Manager)	1.7.8
Ship Characteristics and Improvement Board (SCIB) (see SCIB)	
Ship Design Manager	7.8.3
Ship requirements and specifications	2.5.8
Ships	
Acceptance of	7.8.4
Certification of aviation facilities	7.8.5
T&E of	7.8
Organization for	7.8.3
Policies and principle	7.8.1
T&E Plan	7.8.2
Work Breakdown Structure (SWBS)	C11.1
Small business	
Contracting policy on	6.3.3
Sole Source (see Non-competitive negotiation)	
Solicitation documents	6.6.2
Promulgation of	6.6.3
Source selection	6.6.5
Specification Advocate General as NDI	
NDI Advocate	6.1.2
Specification streamlining	6.5.3
Specification	
Catalogs of	6.5.3
Defined	6.5.3
Federal	6.5.3
Listings of	
DOD Index of Specifications and Standards	6.5.3
Federal Specifications, Standards and Handbooks	6.5.3
Military	6.5.3
Obtaining copies of	6.5.3
Role in contracting	6.5.3
Role of laboratories in development of ..	6.1.6.1
Standard	6.5.3
Streamlining	6.5.3
Specifications and Standards	
DOD Index of (DODISS)	6.5.3
Sponsor's Program Proposal Decision	
Document (SPPD)	3.3.15
SPP (Sponsor Program Proposals)	3.3.7
Standard Subject Identification Code, Dept. of Navy	B2,C9
Standard weapons systems costs	2.7.3.4
State-of-the-art	
Obtaining information on	D4
STO (Science and Technology Objective)	
Marine Corps	2.1.3.3
Studies and analyses	2.2.4.1

Subelement	
Of Research (6.1)	C3.1.2
Sunnyvale T&E Detachment of	
OPTEVFOR	G3.2.3.4
Supply Systems Command (NAVSUP)	E4.5
Support, planning for	2.6
Supportability, T&E and	7.7
System Concept Paper (SCP)	2.5.5.1
Systems Commanders	
Material support responsibilities of	E5.1
Systems Commands	1.8,E4
Systems engineering	2.2.4
Process, definition of	2.2.4.3
Systems Research Center, Virginia	
Polytechnic Institute and State University	F5.5

I

Targets for T&E and training	7.3.6
T&E (Test and Evaluation)	Ch. 7, App. G
Acquisition cycle, in the	7.1.4
And supportability	7.7
Aspect of Full-Scale Development	2.2.10.4
Capability, identification of	7.3.1
Congressional policy on	7.1.5.G1
Coordinator	7.2.6
DCP on	7.5.1
Defined	7.1.1
Director, Operational Test and Evaluation (DOT&E) ..	1.2.6,7.2.1.2,E1.3,G2.2
DT&E	7.4.1
Evaluation, defined	7.1.1
Facilities	7.3
Acquisition of	7.3.3
Scheduling of	7.3.2
Facility Base	7.3.5
Listing of elements	7.3.5.1
Field activities, capabilities of	7.3.1
Fleet support for	7.3.7
Priorities	7.3.7.2
Requirements	7.3.7.1
Scheduling	7.3.7.3
Focal Points	7.2.6
Functions of	7.1.2
Funding of	7.5.4
ILS	7.7
Independent evaluation policy	7.1.3
Information flow	7.6
Information for	
BIS/INSURV	7.6.5

Developers	7.6.1	Test, defined	7.1.1
Development	7.1.2.1	Test issues and problems, defined	7.5.1
Milestone decisions	7.6.3	Tests	
Operating forces	7.1.2.3, 7.6.4	Categories used by OSD	7.4
Program Managers	7.6.2	Two-sided testing	7.4.4.2
Inputs into sequential strategy	2.7.4	TECHEVAL (Technical Evaluation)	7.4.1.2.1
Integral aspect of development process	7.1.4	Technical customer	
IOT&E, policy on timing of	7.1.3	Definition as used in this Guide	6.1.3
LBTS (Land-Based Test Sites)	7.3.4	Technical Evaluation (TECHEVAL)	7.4.1.2.1
Master Plan (TEMP)	7.5.3	Technical libraries	D2
Ships	7.8.2	Technical reports	6.7.2
		Announcement service	D3.2
Milestone decisions		Copy service, DTIC	D3.2.5
T&E inputs for	7.1.2.2	DD 1473 data base	D3.1.3
Nature of	7.1.1	Technology base	
Organization (see T&E responsibilities)		Identification of current efforts	D3.1, D4
Organization for	7.2	Role of laboratories in development of ..	6.1.6.1
OT&E	7.4.2	Technology, planning for development of	2.4
Congressional interest in	7.1.5, G1	Technology push	2.2.9.2
Planning for	7.5	Technology transfer	
Planning Group (Ships)	7.8.3	Domestic program	2.2.9.5
Policy on	7.1.3	TEMP (T&E Master Plan)	7.5.3
Ranges (see Ranges, Test)		PM responsibility for preparation	7.2.7
Ranges and test facilities	7.3	Ships	7.8.2
Reports	7.6.6	Terminals, remote on-line	D3.2.1
Requirements, waiver of	7.1.6	Test	
Resources	7.2	Defined	7.1.1
Responsibilities	7.2	And evaluation (see T&E)	
ASN (R,E&S)	7.2.2	Resource planning	7.5.6
CNO	7.2.3	Technology Information Center (TTIC)	D4.2
DOT&E	1.2.6, 7.2.1.2, E1.3, G2.2	Tests, types of	7.4
INSURV	7.2.4, G3.1	Acceptance trials, INSURV	7.4.3
Marine Corps	7.2.9, E6, G4	Categories	
MCOTEA	2.2.9.1, 7.1.3	Used by Navy	7.4
FMF (Fleet Marine Forces)	7.2.9.3	Used by OSD	7.4
Of officials	G2	DT&E	7.4.1
OP-098 (Director RDT&E)	G2.3	FOT&E	7.4.2.3, 7.4.2.4
OP-983 (T&E Division)	7.2.3, G2.3.1	INSURV trials	7.4.3
OPTEVFOR	7.2.5, G3.2	IOT&E	7.4.2.1, 7.4.2.2
OSD	7.2.1	Joint tests	7.4.4
Program Managers	7.2.7	OPEVAL	7.4.2.2
SECNAV	7.2.2	OT&E	7.4.2
USDRE(T&E)	1.2.3.2, 7.2.1.1, G2.1	TECHEVAL	7.4.1.2.1
Ship acquisition in	7.8	Trials, BIS/INSURV	7.4.3
Tactics and doctrine, inputs for	7.1.2.3	Two-sided	7.4.4.2
Targets for	7.3.6	Threat information	2.2.3
Task statements for	7.5.5	TLR (Top Level Requirements) for ships ..	2.5.8
T&E Division (OP-983)	7.2.3, G2.3.1	TLS (Top Level Specifications) for ships ..	2.5.8
T&E Focal Points	7.2.6	Top Level Requirements (TLR) for ships ..	2.5.8
TECG (T&E Coordinating Group)	7.2.8	Top Level Specifications (TLS) for ships ..	2.5.8
Technical Reports Awareness		TRAC (Technical Reports Awareness	
Circular (TRAC)	D3.2.2	Circular)	D3.2.2

Trails (see Tests, types of)
 TTIC (Test Technology Information
 Center) D4.2

U

Under Secretary of Defense for
 Acquisition box on page E1,A1
 Under Secretary of Defense for Policy
 (see USDP)
 Under Secretary of Defense for Research and
 Engineering (see USDRE)
 USDP (Under Secretary of Defense for
 Policy) 1.2.2,E1.2
 USDRE (Under Secretary of Defense for Research
 and Engineering) 1.2.3,E1.1
 Deputy USDRE (Research and Advanced
 Technology) (DUSDRE (R&AT)) 1.2.3.1
 Director, Defense Test and Evaluation
 (DDTE) 1.2.3.2,7.2.1.1,G2.1
 Principal witness for RDT&E 4.8.4
 RDT&E responsibilities 1.2.3
 T&E responsibilities 7.2.1
 User-Supplier dialog 2.2.9
 In procurement 6.1.3
 In ship definition 2.5.8
 Supplier functions in 2.2.9
 User functions in 2.2.9

V

Validation Phase, Demonstration and 2.2.10.3
 VPI Systems Research Center F10.7
 VX-1, detachment of OPTEVFOR G3.2.3.1
 VX-4, detachment of OPTEVFOR G3.2.3.2
 VX-5, detachment of OPTEVFOR G3.2.3.3

W

Waiver of T&E requirements 7.1.6
 WBS (Work Breakdown Structure)
 As classification system C11
 Ships (SWBS) C11.1
 Structure for costing 2.7.3.2
 Use in cost reporting 6.7.4
 Weapon system cost, standard 2.7.3.4,C8
 Weapon system test (joint) 7.4.4.1
 Witnesses before Congressional committees,
 guidelines for 4.8.2
 Work Breakdown Structure (see WBS)
 Work request, in-house laboratory 6.2.4
 Work statement, contract 6.5.4
 Work unit, defined H
 Data Bank D3.1.1
 Working capital fund 5.3.4.1

DT&E	Developmental Test and Evaluation	MARCORPS	Marine Corps
DTC	Design-to-Cost	MBI	Major Budget Issues
DTIC	Defense Technical Information Center	MCDEC	Marine Corps Development and Education Command
DTNSRDC	David W. Taylor Naval Ship R&D Center	MCOTEA	Marine Corps Operational Testing and Evaluation Activity
DWSIG	Director Weapons Support Improvement Group	MCPDM	Marine Corps Program Decision Meeting
ECCM	Electronic Counter Countermeasures	MEWS	Mission-Essential Weapon System
ECM	Electronic Countermeasures	MIC	Management Information Center
ECP	Engineering Change Proposal	MI/DS	Management Information/Data Systems
EMC	Electromagnetic Compatibility	MILCON/	Military Construction (Appropriation)
EPA	Extended Planning Annex	MCON/	
EPS	Engineered Performance Standards	MICON	
ESA	Naval Weapons Engineering Support Activity	MIL-STD	Military Standard
ESO	Electronics Supply Office	MIPR	Military Inter-Departmental Purchase Request
ETS	Engineering Technical Services	MIS	Management Information System
EW	Electronic Warfare	MIS	Metrology Information Service
FAR	Federal Acquisition Regulation	MLRP	Marine Corps Long-Range Plan
FCRC	Federal Contract Research Center	MM&SC	Major Mission & Support Category
FCT	Final Contract Trials	MMROP	Marine Corps Mid-Range Objectives Plan
FFP	Firm Fixed Price	MP	Materiel Professional (program)
FIP	Fleet Introduction Program	MRO	Mid-Range Objectives
FMF	Fleet Marine Forces	MRTFB	Major Range and Test Facility Base
FMR	Financial Management Report	MSARC	Marine Corps Systems Acquisition Review Council
FOT&E	Follow-on Operational Test and Evaluation	MTBF	Mean Time Between Failures
FPI	Fixed-Price Incentive	MTTR	Mean Time to Repair
FSED	Full-Scale Engineering Development	MUL	Master Urgency List
FYDP	Five-Year Defense Program	MWDDEP	Mutual Weapons Development Data Exchange Program
GAO	General Accounting Office		
GFE	Government-Furnished Equipment	MYP	Multi-Year Procurement
GFM	Government-Furnished Material	NADC	Naval Air Development Center
GIDEP	Government-Industry Data Exchange Program	NADEC	Navy Decision Center
GOCO	Government-Owned, Contractor-Operated (Laboratory)	NAE	Navy Acquisition Executive
GPO	Government Printing Office	NAILSC	Naval Air Integrated Logistic Support Center
GRA	Government Research Announcement	NAMRL	Naval Aerospace Medical Research Laboratory
HASC	House Armed Services Committee	NARDIC	Navy Acquisition Research and Development Information Center
HQMC	Headquarters Marine Corps		
IAC	Information Analysis Center	NARSUP	Navy Supplement to FAR and DFARS
ICE	Independent Cost Estimates	NATC	Naval Air Test Center
ICP	Inventory Control Point	NAVAIR	Naval Air Systems Command Headquarters
IDA	Institute for Defense Analyses	NAVCOMPT	Office of the Comptroller of the Navy
ILS	Integrated Logistic Support	NAVFAC	Naval Facilities Engineering Command
ILSM	ILS Manager	NAVIC	Navy Information Center
INS	Institute of Naval Studies	NAVMECOM	Naval Medical Command
INSURV	Board of Inspection and Survey	NAVSEA	Naval Sea Systems Command
IOC	Initial Operational Capability (date)	NAVSUP	Naval Supply Systems Command
IOT&E	Initial Operational Test and Evaluation	NBDL	Naval Biodynamics Laboratory
IPR	In-Progress Review	NCEL	Naval Civil Engineering Laboratory
IPS	Integrated Program Summary	NCIS	Navy Cost Information System
IR&D	Independent Research and Development	NCP	Navy Capabilities Plan
IR/IED	Independent Research/Independent Exploratory Development	NCSC	Naval Coastal Systems Center
ISR	Investment Strategy Review	NCTRF	Naval Clothing and Textile Research Facility
ITP	Integrated Test Package	NDCP	Navy Decision Coordinating Paper
J&A	Justifications and Approvals	NDI	Non-Developmental Item
JCS	Joint Chiefs of Staff	NDRI	Naval Dental Research Institute
JIEP	Joint Intelligence Estimate for Planning	NEODIC	Naval Explosive Ordnance Disposal Technology Center
JLRSA	Joint Long Range Strategic Appraisal	NEPRE	Naval Environmental Prediction Research Facility
JMSNS	Justification for Major System New Start	NHRC	Naval Health Research Center
JOT&E	Joint Operational T&E	NIB	Not to Interfere Basis
JPAM	Joint Program Assessment Memorandum	NICRAD	Navy/Industry Cooperative R&D Program
JRMB	Joint Requirements and Management Board	NI	Navy Industrial Fund
JSCP	Joint Strategic Capabilities Plan	NISC	Naval Intelligence Support Center
JSO	Joint Service Office	NERG	Navy Long Range Guidance
JSPD	Joint Strategic Planning Document	NMARC	Navy and Marine Corps Acquisition Review Committee
JSPS	Joint Staff Planning System	NMRG	Navy Mid-Range Guidance
JT&E	Joint Test and Evaluation	NMRI	Naval Medical Research Institute
LBTS	Land Based Test Sites	NOA	New Obligational Authority
LCC	Life Cycle Cost	NORDA	Naval Ocean Research and Development Activity
LRG	Logistics Review Group	NOSC	Naval Ocean Systems Center
LRG	Navy Long Range Guidelines	NPDM	Navy Program Decision Meeting
LRIP	Low Rate Initial Production		
LRG	Navy Long Range Objectives		

NPE	Navy Preliminary Evaluation	RDA	Research, Development, and Acquisition
NPRO	Navy Program Planning Office	RDC	Rapid Development Capability
NPRDC	Navy Personnel Research and Development Center	RDDS	RDT&E Descriptive Summary
NRAC	Naval Research Advisory Committee	RDT&E	Research, Development, Test, and Evaluation
NRL	Naval Research Laboratory	RDT&E.N	Research, Development, Test and Evaluation, Navy (Appropriation)
NRR	Naval Research Requirement	RFP	Request for Proposal
NSA	National Security Agency	RFQ	Request for Quotation
NSC	National Security Council	ROC	Required Operational Capabilities
NSMRI	Naval Submarine Medical Research Laboratory	S&T	Science and Technology
NSSA	Navy Space Systems Activity	SAP	Ship Acquisition Plan
NSWC	Naval Surface Weapons Center	SAR	Selected Acquisition Report
NSWSES	National Ship Weapons Systems Engineering Station	SC	System Concept
NTE	Navy Technical Evaluation	SCIB	Ship Characteristics and Improvement Board
NTEC	Naval Training Equipment Center	SCN	Shipbuilding and Conversion, Navy (Appropriation)
NTIS	National Technical Information Service	SCP	System Concept Paper
NTP	Navy Training Plan	SDDM	Secretary of Defense Decision Memorandum
NUSC	Naval Underwater Systems Center	SDI	Selective Dissemination of Information
NWC	Naval Weapons Center	SDO	Ship Development Objective
O&MN	Operation and Maintenance, Navy (Appropriation)	SECDEF	Secretary of Defense
OCNR	Office of the Chief of Naval Research	SECNAV	Secretary of the Navy
OJCS	Organization of the Joint Chiefs of Staff	SHAPM	Ship Acquisition Project Manager
ONR	Office of Naval Research	SIOF	Single Integrated Operational Plan
ONT	Office of Naval Technology	SLEP	Service Life Extension Program
OPA	Office of Program Appraisal	SNDL	Standard Navy Distribution List
OPEVAL	Operational Evaluation	SNDM	SECNAV Decision Memorandum
OPN	Other Procurement, Navy (Appropriation)	SPE	Systems Performance Effectiveness
OPTEVFOR	Operational Test and Evaluation Force	SPEED	Special Procedures for Expediting Equipment Development
OR	Operational Requirement	SPP	Sponsor Program Proposal
OSIP	Operational Safety Improvement Program	SPP	Subproject Program Plan
OT&E	Operational Test and Evaluation (Research and Engineering)	SPPD	Sponsor Program Proposal Document
P&MN	Procurement of Aircraft and Missiles, Navy (Appropriation)	SPR	Sponsor's Program Review
PAR	Production Acquisition Report	SPRDD	Sponsor's Program Review Decision Document
PAT&E	Production Acceptance Test and Evaluation	SSA	Source Selection Authority
PBD	Program Budget Decision	SSAC	Source Selection Advisory Council
PC	Program Coordinator	SSEB	Source Selection Evaluation Board
PCD	Program Change Decision	STI	Scientific and Technical Information
PCR	Program Change Request	STO	Science and Technology Objective
PD	Program Director	SVIC	Shock and Vibration Information Center
PDA	Principal Development Activity	SWBS	Ship Work Breakdown Structure
PDA	Program Decision Authority	SYSCOM	Systems Command
PDM	Program Decision Memorandum	TAB	Technical Abstracts Bulletin
PDRC	Program Development Review Committee	TAD	Technology Area Description
PDS	Primary Development Service/Agency	T&E	Test and Evaluation
PE	Program Element	TC ³	Tactical Command and Control and Communications
PEM	Program Endorsement Memorandum	TECG	Test and Evaluation Coordinating Group
PEO	Program Executive Officer	TECHEVAL	Technical Evaluation
PES	Program Evaluation Summary	TEMP	Test and Evaluation Master Plan
PIC	Navy Department Program Information Center	TEPG	Test and Evaluation Planning Group
PM	Program Manager	TLR/TLN	Top Level Requirements/Top Level Specifications
PMP	Program Management Proposal	TOA	Total Obligation Authority
PMTC	Pacific Missile Test Center	TOR	Tentative Operational Requirement
POE	Projected Operational Environments	TPFG	Technology Programming and Fiscal Guidance
POM	Program Objectives Memorandum	TPPG	Technology Policy and Planning Guidance
PPBS	Planning, Programming, and Budgeting System	TTSD	Total Ship Test Director
PPC	Proposed Program Changes	USDA	Under Secretary of Defense (Acquisition)
PR	Procurement Request	USDP	Under Secretary of Defense, Policy
PRESINSURV	President, Board of Inspection and Survey	USDRI	Under Secretary of Defense, Research and Engineering
PSA	Post Shakedown Availability	UT	Underway Trials
QMR	Qualitative Material Requirements (Army)	VCNM	Vice Chief of Naval Material
QPL	Qualified Products List	VCNO	Vice Chief of Naval Operations
RAN	Request for Authority to Negotiate	VE	Value Engineering
R&D	Research and Development	WBS	Work Breakdown Structure
R&M	Reliability and Maintainability	WSA	Warfare Systems Architecture (Standards)
R&TWLIS	Research and Technology Work Unit Information System	WSE	Warfare Systems Engineering (Standards)
RD&E	Research, Development, and Engineering	WSIG	Weapons Support Improvement Group

END

5-87

DTIC